Vol. 1021 Number 1

OFFICIAL GAZETTE

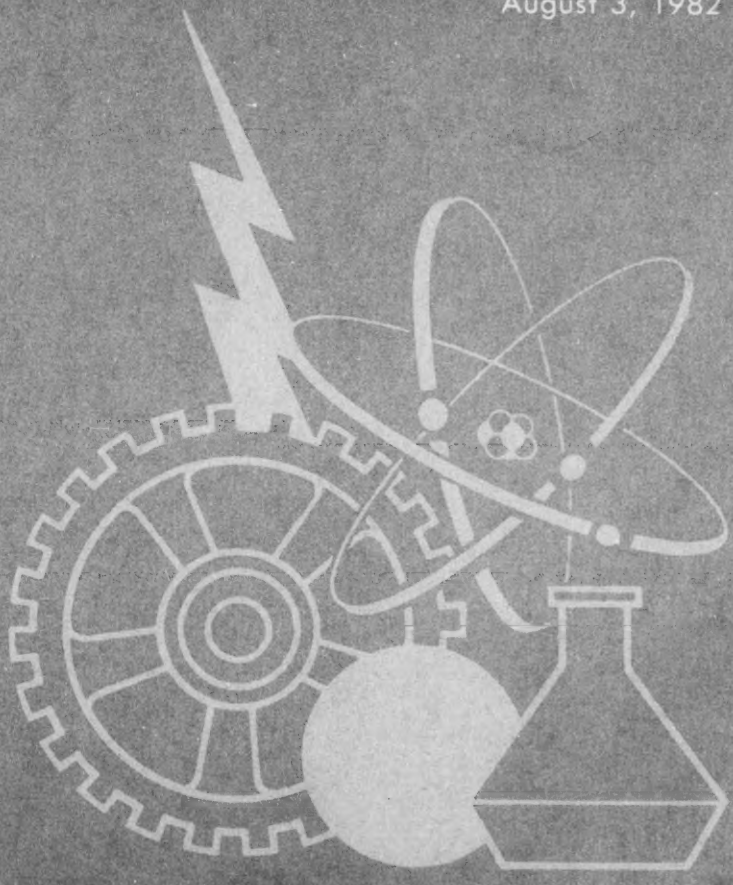
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

August 3, 1982



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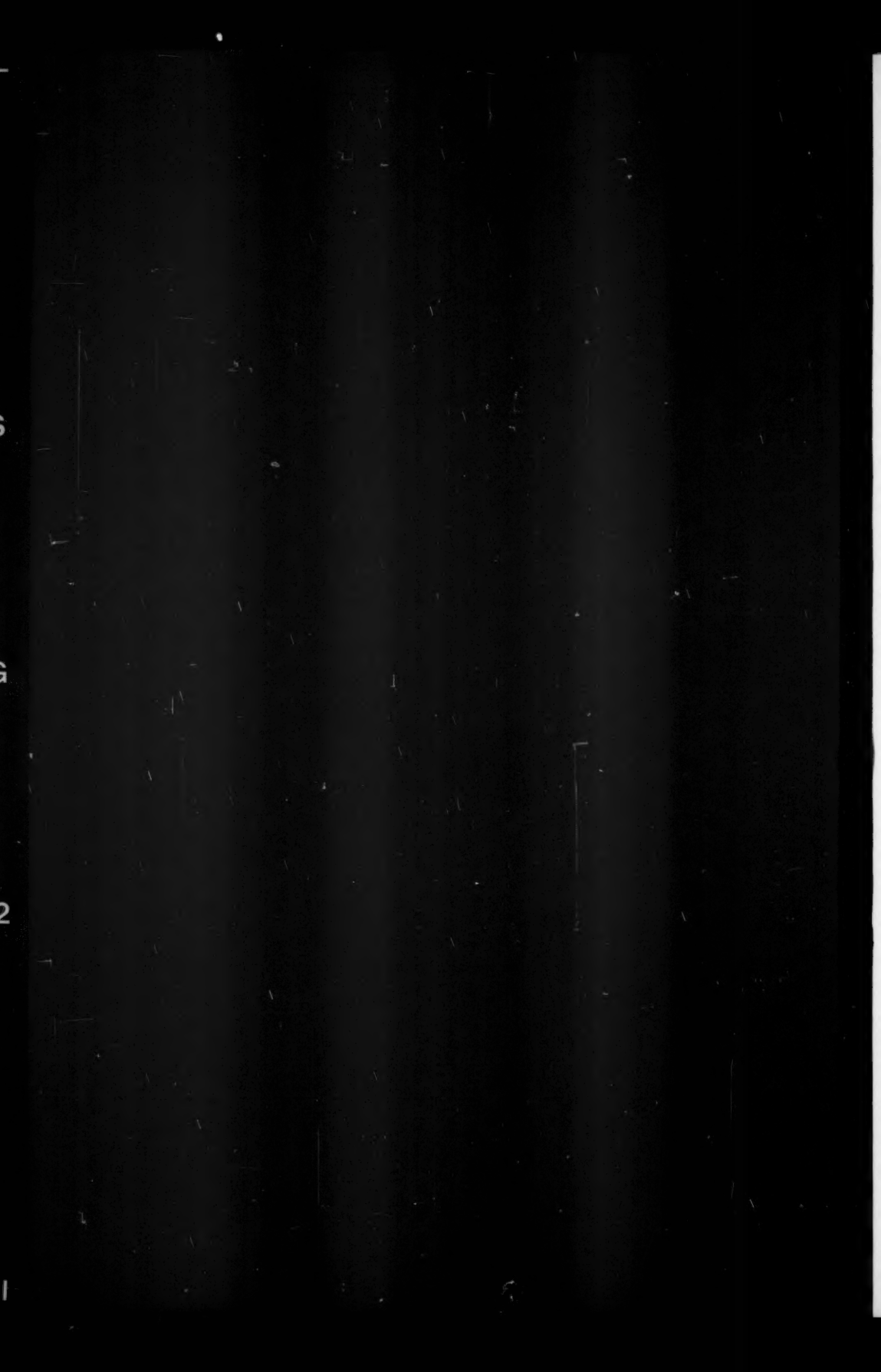

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

August 3, 1982 Volume 1021 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of June 1982

Affirmed	221
Affirmed in Part	19
Reversed	81
Total	321

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,062,737, Re. S.N. 371,918, Filed Apr. 26, 1982, Cl. 204/043.00R, ELECTRODEPOSITION OF CHROMIUM, Donald J. Barclay, et al., Owner of Record: *International Business Machine Corp., Armonk, N.Y.,* Attorney or Agent: Francis A. Sirr, Ex. Gp.: 112

4,094,053, Re. S.N. 321,379, Filed Nov. 16, 1981, Cl. 29/420, FORGING PROCESS, Elbert K. Weaver, Owner of Record: *Wyman-Gordon Co., Worcester, Mass.,* Attorney or Agent: Norman Blodgett, et al., Ex. Gp.: 321

4,110,472, Re. S.N. 376,160, Filed May 7, 1982, Cl. 424/330, DERIVATIVES OF 1-(DISUBSTITUTED PHENOXY)-3-AMINO-2-HYDROXYPROPANES, Rudolf Hiltmann, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Jesse D. Reingold, Ex. Gp.: 125

4,203,935, Re. S.N. 379,561, Filed May 18, 1982, Cl. 261/98, FILTER MEDIA, Ernst Hackenjos, Owner of Record: *Rolf A. Jaeger, Costa Mesa, Calif.,* Attorney or Agent: Louis J. Knobbe, et al., Ex. Gp.: 177

4,248,587, Re. S.N. 379,251, Filed May 17, 1982, Cl. 433/4, ORTHODONTIC TOOL, Craven H. Kurz, Owner of Record: *Inventor,* Attorney or Agent: Keith D. Beecher, Ex. Gp.: 333

4,306,318, Re. S.N. 369,962, Filed Apr. 19, 1982, Cl. 3/1.4, TUBULAR ORGANIC PROSTHESIS, Hiroshi Mano, et al., Owner of Record: *Sumitomo Electric Industries, Ltd., Osaka, Japan,* Attorney or Agent: Thomas J. Macpeak, Ex. Gp.: 337

4,310,735, Re. S.N. 378,825, Filed May 17, 1982, Cl. 200/144B, ARC-SHIELD SUPPORTING STRUCTURE OF A VACUUM POWER INTERRUPTER, Shinzo Sakuma, et al., Owner of Record: *Kabushiki Kaisha Meidensha & Kabushiki Kaisha Gemvac, Tokyo, Japan,* Attorney or Agent: J. Harold Nissen, et al., Ex. Gp.: 217

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,866,100, Reexam. No. 90/000,215, Requested: June 24, 1982, Cl. 318/257, UNIVERSAL MOTOR CONTROL, Daniel P. Palenchar, et al., Owner of Record: *Kardex Systems Corp., Marietta, Ohio,* Attorney or Agent: Daniel H. Kane, Ex. Gp.: 210, Requester: Marvin Glazer, Cahill, Sutton & Thomas, Phoenix, Az.

4,037,418, Reexam. No. 90/000,224, Requested: July 6, 1982, Cl. 405/259, LOAD SUPPORTING BEARING PLATE, John I. Hannan, Owner of Record: *Phillips Stamping Co., Inc., Bellaire, Ohio,* Attorney or Agent: Fay & Sharpe, Ex. Gp.: 356, Requester: Jennmar Corp., Cresson, Pa.

4,208,965, Reexam. No. 90/000,222, Requested: June 30, 1982, Cl. 101/426, METHOD FOR ELECTROSTATIC ASSISTANCE IN PRINTING PROCESSES AND PRINTING MACHINES HAVING ELECTROSTATIC SUBSTRATE CONTACT PRESSURE, Helmut Fichler, et al., Owner of Record: *Inventors,* Attorney or Agent: Sughrue, Rothwell, Mion, Zinn & MacPeak, Ex. Gp.: 337, Requester: Spengler Electronic AG, Biel-Benken, Switzerland

PATENT NOTICES

Certificates of Correction for the Week of August 3, 1982

Re. 30,836	4,289,426	4,318,974	4,326,593
D. 258,518	4,289,785	4,319,011	4,327,050
D. 258,520	4,291,437	4,319,934	4,327,075
D. 258,521	4,293,236	4,319,984	4,327,114
D. 258,522	4,297,205	4,320,109	4,327,283
D. 258,524	4,297,607	4,320,268	4,327,602
D. 258,525	4,300,585	4,320,292	4,327,969
D. 262,889	4,301,294	4,320,659	4,328,044
D. 263,228	4,303,426	4,320,784	4,328,382
D. 264,098	4,303,977	4,321,205	4,328,399
3,811,544	4,304,809	4,321,951	4,328,581
4,006,103	4,304,873	4,322,400	4,328,662
4,028,366	4,305,162	4,322,561	4,328,861
4,079,693	4,305,293	4,322,647	4,329,040
4,084,051	4,305,574	4,323,169	4,329,203
4,103,081	4,308,824	4,323,197	4,329,330
4,191,635	4,310,131	4,323,521	4,329,339
4,193,291	4,310,338	4,323,674	4,329,802
4,210,043	4,310,339	4,323,757	4,330,036
4,210,416	4,310,369	4,323,765	4,330,134
4,225,257	4,310,542	4,323,772	4,330,325
4,225,322	4,311,497	4,323,973	4,330,607
4,225,787	4,312,302	4,324,215	4,330,640
4,226,838	4,312,623	4,324,382	4,330,701
4,228,410	4,312,643	4,324,768	4,331,070
4,243,938	4,312,714	4,324,788	4,331,206
4,244,404	4,312,916	4,324,804	4,331,247
4,247,732	4,313,959	4,324,887	4,331,302
4,253,195	4,314,806	4,324,928	4,331,349
4,253,843	4,314,901	4,325,124	4,331,388
4,259,359	4,315,540	4,325,460	4,331,507
4,265,533	4,316,736	4,325,532	4,331,602
4,267,609	4,316,898	4,325,582	4,331,650
4,268,401	4,317,041	4,325,589	4,331,698
4,268,944	4,317,067	4,325,618	4,331,767
4,270,399	4,317,208	4,325,653	4,331,794
4,272,202	4,317,244	4,325,721	4,331,931
4,273,923	4,317,436	4,325,836	4,332,004
4,273,957	4,317,497	4,325,922	4,332,754
4,273,981	4,317,504	4,325,940	4,332,983
4,274,445	4,317,742	4,325,947	4,333,398
4,275,096	4,317,792	4,326,368	4,333,856
4,275,163	4,318,360	4,326,382	4,333,907
4,278,100	4,318,387	4,326,448	4,333,973
4,280,604	4,318,594	4,326,473	4,334,570
4,288,625	4,318,769	4,326,515	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 12, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-03-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-11-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	6-22-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-03-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-01-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-24-80

Expiration of patents: The patents within the range of numbers indicated below expire during June 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,186,004 to 3,192,535, inclusive

Plant Patents ..... Numbers 2,522 to 2,542 inclusive

REEXAMINATIONS

AUGUST 3, 1982

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,614,368 (11th)

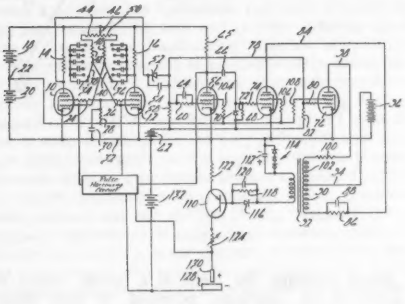
ELECTRICAL DISCHARGE MACHINING SHORT CIRCUIT PROTECTION SYSTEM OF THE KEYED TYPE

Walter Lobur, Clawson, Michigan, assignor to Colt Industries Operating Corp., New York, N.Y.

Reexamination Request No. 90/000,039, Jul. 27, 1981.

Reexamination Certificate for Patent No. 3,614,368, issued Oct. 19, 1971, Ser. No. 1,732, Jan. 9, 1970.

U.S. Cl. 219—69 P **Int. Cl.[3] B23P *1/02***



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1, 5 and 6 is confirmed.

Claims 2, 3 and 4 are amended and determined to be patentable.

1. The method of electrical discharge machining comprising the steps of providing machining power pulses of a predetermined on-off time duration across a machining gap, wherein the improvement comprises sensing for short circuit condition of said gap; responsive to said condition, increasing the off-time of said pulses but maintaining said on-time constant; and, subsequent to removal of said condition, restoring the off-time of said pulses to said predetermined time duration.

B1 4,016,395 (12th)

WIRE ELECTRODE FEED SYSTEM FOR ELECTRICAL DISCHARGE MACHINING

Frank P. Rietveld, Matthews, N.C., assignor to Colt Industries Operating Corporation, New York, N.Y.

Reexamination Request No. 90/000,040, Jul. 29, 1981.

Reexamination Certificate for Patent No. 4,016,395, issued Apr. 5, 1977, Ser. No. 532,200, Dec. 12, 1974.

U.S. Cl. 219—69 W **Int. Cl.[3] B23P *1/08***

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 2–5 is confirmed.

Claim 1 is determined to be patentable as amended.

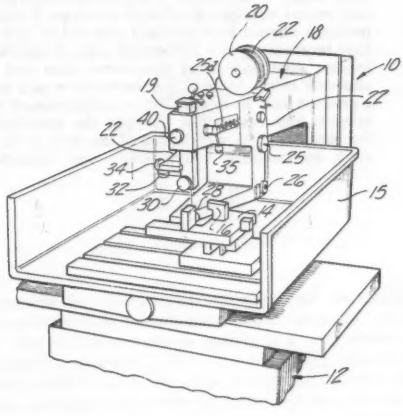
1. In an electrical discharge machining apparatus including a machine tool having a head which provides machining of a workpiece by means of a conductive electrode wire, the combination comprising:

a supply reel for the wire mounted in a freely rotatable manner on said machine tool;

a plurality of guide rollers for retaining and transporting said wire in a continuous path to provide a cutting movement relative to the workpiece;

a pair of opposed rollers biased one toward the other, one driven and the other driving, to provide a constant and uniform pulling force on the wire to provide its continuous movement through said path as machining progresses;

a means operably connected to said driven roller for rocking it out of its juxtaposed position relative to said driving roller to provide clearance therebetween and allow for initial threading of the electrode wire;



said workpiece being mounted on a first table controllably movable in an X axial direction, said first table being further mounted on a second table for controlled movement in a Y axial direction; and said electrode wire being maintained in a precisely adjustable, vertical path by a pair of guide rollers, each of said guide rollers having its axis of rotation orthogonal to the axis of rotation of the other, said guide rollers further mounted at points spaced from the upper and lower surfaces of said workpiece, respectively, each of said last mentioned guide rollers being adjustable and lockable in the axial direction to provide for adjustment to a precise degree of the vertical path of said wire proximate to said workpiece *and each of said last mentioned guide rollers having a circumferential groove for retaining said wire.*

B1 Re. 30,315 (13th)

PRECISION BASE MERCURY VAPOR LAMP

Carlo F. LaFiandra, Kinnelon, N.J., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Reexamination Request No. 90/000,019, Jul. 2, 1981.
Reexamination Certificate for Patent No. Re. 30,315, issued Jun. 24, 1980, Ser. No. 916,278, Jun. 16, 1978.
U.S. Cl. 313—51 Int. Cl.[3] H01J 5/48

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 6 and 7 is confirmed.

Claims 2, 3 and 4, having been finally determined to be unpatentable, are cancelled.

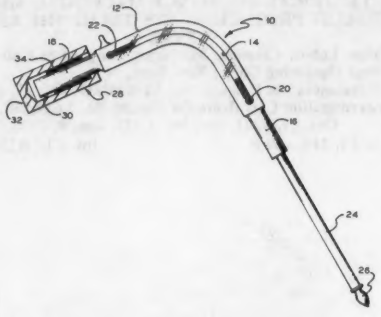
Claims 1 and 5 are determined to be patentable as amended.

New claims 8–13 are added and determined to be patentable.

1. A gaseous discharge lamp comprising:

a. a radiation-transmitting tubular envelope defining a plasma cavity of arcuate configuration and capillary cross-section containing an ionizable substance;

b. a rigid mounting base fixedly secured to one end of said envelope having *external planar faces forming a hexagonal prism,* [a configuration which is geometrically unique with respect to a predetermined position and spatial orientation of said envelope,] said base having a coaxial bore and said one end of said envelope terminating in a cylindrical stub of significantly smaller axial and radial dimensions than said bore, said stub being disposed and mounted in said bore in a position such as to establish a predetermined spatial relation and orientation between the envelope and the base, whereby installation of the lamp in its operating environment automatically and reproducibly places the envelope and, concomitantly, the plasma cavity of the lamp in a predetermined position and spatial orientation relative to said environment; and



c. means coupling the lamp to a power source for applying an operating potential to said plasma cavity.

DEFENSIVE PUBLICATIONS

PUBLISHED AUGUST 3, 1982

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T102,101
SOFT CONTACT LENSES RESISTANT TO OPACIFICATION IN USE

Nancy J. Drake, 11770 Jennifer Ct., and Charles J. Hora, 6344 Coleridge Rd., both of Painesville, Ohio 44077

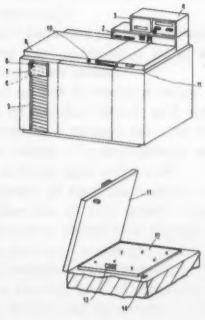
Filed Sep. 28, 1981, Ser. No. 306,294
Int. Cl.³ C08F *8/32, 8/46*
U.S. Cl. 525—183
No Drawing. 19 Pages Specification

A hydrophilic polymer shaped article adapted for use as a soft contact lens is treated to provide at least on the surfaces thereof a modified, less hydrophilic polymeric structure inhibiting penetration by bacteria and proteins, whereby development of clouding and discoloration of the lens material during use is significantly retarded. Modification of the lens surfaces is effected by treatment of the lenses, either unhydrated or in a partially hydrated state, at a temperature ranging from room temperature to 100° C. and for a time period of 1 to 24 hours, with a water-soluble mono- or poly-carboxylic acid selected from alpha-amino acids, such as arginine, cysteine, glycine and like acids, aliphatic dicarboxylic acids or aromatic dicarboxylic and tricarboxylic acids, such as malonic, maleic, glutaric, citraionic, itaconic acid and the like. During treatment, the modifying acid becomes chemically and permanently incorporated into the hydrophilic polymer structure as evidenced by the fact that when treated with radioactive modifying acids, the lenses so treated permanently retain some labeled acid molecules (^{14}C counts) which cannot be removed with continued leaching.

T102,102
ACCESS CONTROLLED COPIER

Albert Bolle, Schurwaldstr. 7, 7300 Berkheim, Esslingen, and Karl-Heinz Jaksch, Danziger Str. 7, 7033 Herrenberg, both of Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 243,978
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 3021504
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R
1 Sheets Drawing. 10 Pages Specification

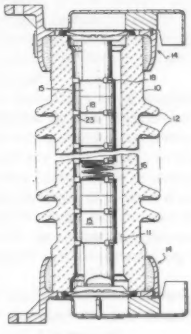


One or more collator/sorter bins at a copier output are locked to the user by means of a badge reader or the like. The user enters identification data into the copier to enable copier operation. Machine controls precede copy run by latching the document platen cover and displaying user-entered identification data in a manner so that it is recorded on the first copy which is delivered to the locked collator/sorter bin or bins. The number of copies selected by the user are then processed and delivered to user-accessible bins. The platen cover is thereafter unlatched to allow user recovery of the original document.

T102,103
SURGE ARRESTER INSULATING SPACER DEVICE

Dennis W. Lenk, 430 Miller Dr., Medina, Ohio 44256

Filed Sep. 25, 1981, Ser. No. 305,832
Int. Cl.³ H02H *1/04*
U.S. Cl. 361—118
2 Sheets Drawing. 14 Pages Specification



An assembly for mechanically protecting and electrically insulating metal oxide varistor disks from the generally cylindrical inner wall of a porcelain housing of a surge arrestor. Each assembly comprising a flat metal disk having a diameter less than that of the inner wall of the housing and a plurality of resilient, electrically non-conductive spacer members mounted around the periphery of the disk for supporting the disk vertically in the housing.

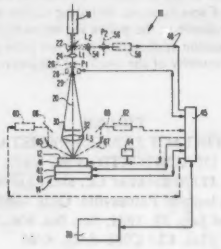
T102,104
SCANNING OPTICAL SYSTEM ADAPTED FOR LINEWIDTH MEASUREMENT IN SEMICONDUCTOR DEVICES

Joseph P. Kirk, Chelsea Rd., Chelsea, N.Y. 12512; Josef Predatsch, 12 Candy La., Hopewell Junction, N.Y. 12533, and Lo-Soun Su, 9 Amherst La., Wappingers Falls, N.Y. 12590

Continuation of Ser. No. 974,639, Dec. 29, 1978, abandoned. This application Jul. 30, 1980, Ser. No. 173,535
Int. Cl.³ G01B *11/02, 11/30*
U.S. Cl. 356—387
3 Sheets Drawing. 18 Pages Specification

The present invention is directed to an optical system particularly adapted for measuring the linewidth of conductors. The particular arrangement of the various components of the optical system provide a simple system with high resolution for use in measuring very small linewidths. The optical system of the present invention utilizes a DC signal which is simpler and easier to control than an AC signal used with some optical measurement systems. More particularly, the optical system of

the present invention utilizes a principle used for accurate focusing or for topographical measurements to enhance the ability of the optical system to measure small linewidths. The optical system of the claimed invention includes a high intensity light source **18,** such as a laser. Means are provided for defining and focusing a spot of the light source upon a surface **12** having features to be measured. The spot defining and focusing means include in sequence between the light source and the surface, a first lens **24,** an aperture **26,** and a second lens **32.** The arrangement of the first and second lenses and the aperture is such that the light source is focused at the aperture by the first lens to provide a spot and the spot is focused on the surface **12** by the second lens. With this arrangement, the surface is located at the focal point of the second lens so that reflected light is refocused back in the plane of the aperture. The system further includes scanning means for selectively moving the spot across the surface to encounter the features to be measured. Light collection means **60, 62** are positioned proximate to the surface for detecting varying levels of light reflected from the surface as the spot is scanned over the edges of the features of interest. An electrical DC output is produced in response to the scanning. Means are provided for analyzing the output of the light sensitive means for providing



high accuracy measurements of the distance between the detected edges of the features scanned by the spot.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,004

ELECTRONIC MUSICAL INSTRUMENT UTILIZING DATA PROCESSING SYSTEM

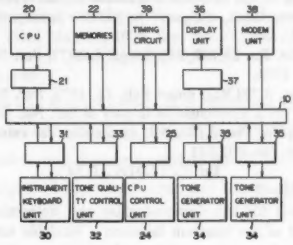
Koji Niimi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,184,400, dated Jan. 22, 1980, Ser. No. 860,100, Dec. 13, 1977. Application for reissue Jan. 30, 1981, Ser. No. 230,348

Claims priority, application Japan, Dec. 17, 1976, 51-150830

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.01 **31 Claims**



21. A computer controlled electronic musical instrument comprising:

tone generator means for generating a musical tone having frequency and waveshape parameters established in response to supplied data codes defining these parameters, said tone generator means including means for holding such data codes supplied on a time shared basis;

note selection means for providing first signals indicative of a selected frequency of a tone to be generated;

tone quality control means for providing second signals indicative of selected tone quality to be imparted to the tone to be generated;

common data bus means to which said tone generator means, said note selection means and said tone quality control means are connected; and

a programmable, stored-program computer connected to said common data bus means whereby said tone generator means, said note selection means and said tone quality control means are connected to the computer via the common data bus means respectively;

said computer including program storage and execution means for storing and executing a set of electronic computation instructions which include;

a first subset of such instructions which, when executed, causes detection of said first signals with concomitant supply on a time shared basis through the data bus means to said tone generator means of a programmed set of the frequency parameter defining data codes; and

a second subset of such instructions which, when executed, causes detection of said second signals with concomitant supply on a time shared basis through the data bus means to said tone generator means of a programmed set of the waveshape parameter defining data codes, thereby causing generation of a musical tone of frequency selected by said note selection means and waveshape based on the tone quality selection of said tone quality control means.

23. A keyboard electronic musical instrument comprising:

a common bus via which all signals are communicated between components of said instrument,

a microprocessor stored program computer operatively connected to said bus,

a keyboard unit including a key switch matrix,

a tone quality control unit,

tone generator means,

said microprocessor computer, said keyboard unit, said tone quality control unit and said tone generator means each interfacing with said bus,

said microprocessor computer having program means for causing said microprocessor to respond to condition changes of said key switch matrix or said tone quality control unit, as signaled via said bus, and in response thereto, to transmit to said tone generator means, in time shared order via said bus, tone generation control signals indicative of or responsive to the changed condition of the respective key switch matrix and tone quality control unit.

28. A keyboard electronic musical instrument comprising:

a common bus via which all data is communicated between components of said instrument,

a microprocessor stored program computer operatively connected to said bus,

a plurality of musical tone generators connected to said bus, each identified by a respective address,

a keyboard unit operatively connected to said bus to transmit to the microprocessor computer via said bus key data signals for actuated keys, and

program means, including a set of electronic computation instructions executed by said microprocessor stored program computer, for causing said microprocessor computer to recognize from said key data signals received via said bus a changed key switch state, and in response thereto to cause said microprocessor computer to produce a new or modified tone generation control signal and to transmit the same via said bus to a certain one of said tone generators, the address of which is associated with the actuated key by said microprocessor computer.

30. A keyboard electronic musical instrument comprising:

a common bus via which all data is communicated between components of said instrument,

a microprocessor stored program computer operatively connected to said bus,

musical tone generator means, connected to said bus, for generating tones in conformity with note code and waveshape data communicated thereto via said bus,

a keyboard switch state detector operatively connected to said bus, and configured to transmit to said bus first signals indicative of the changed state and identity of corresponding keys in said keyboard,

a tone quality control unit operatively connected to said bus and configured to transmit to said bus second signals for determining tone quality,

first program means, including a first set of electronic computation instructions stored and executed by said microprocessor computer, for causing said microprocessor computer to recognize from said first signals received via said bus a new key-on condition, and in response thereto to transmit via said bus the note code of the corresponding key to said tone generator means, and to recognize from said first signals a subsequent change in actuation state of the same key, and in response thereto to transmit via said bus to said tone generator means additional note production data, and

second program means, including a second set of electronic computation instructions stored and executed by said microprocessor computer, for causing said microprocessor computer to recognize from said second signals that the tone quality of the tones being generated is to be changed, and in response thereto to transmit via said bus to said tone generator means third signals for determining the tone quality, said tone generator means being configured to receive said third signals and

to modify the tone quality of the tones generated thereby in accordance with said received signals,

whereby detection of actuated keys, detection of tone quality information, and generation of musical tones in conformity with these detected data are microprocessor computer controlled.

Re. 31,005

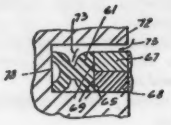
RESILIENT PLASTIC PISTON RING

Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Original No. 3,608,911, dated Sep. 28, 1971, Ser. No. 16,278, Mar. 4, 1970. Application for reissue Nov. 30, 1979, Ser. No. 98,928

Int. Cl.[3] F16J *9/00, 9/20*

U.S. Cl. 277—138 7 Claims



15. A piston and piston ring combination for use in an internal combustion engine comprising a piston movable in opposite directions in a cylinder and having at least one ring groove therein, a plurality of axially thin metal piston rings received in said groove one atop the other and projecting radially beyond said groove, each piston ring being split axially so as to have a circumferential gap, the gaps in said piston rings being circumferentially spaced, radially inner peripheries of said piston rings terminating in spaced relationship to a radially inner periphery of said groove, an expander ring for sealingly engaging the inner periphery of said groove and for sealingly engaging the inner peripheries of said piston rings and for restraining said piston rings against independent rotation with respect to one another during movement of the piston in said opposite directions, said expander ring comprising a one-piece body of elastomeric material that is stable at temperatures up to at least 900° F. which may be present in an internal combustion engine during its operation, said expander ring body having a radial cross-section which includes an annular radially inner portion to sealingly engage said radially inner surface of the groove in the piston, an annular radially outer portion to sealingly engage radially inner surfaces of the piston rings and providing a single annular area of sealing engagement with the inner surfaces of the piston rings which spans each joint between abutting radially extending side surfaces of the piston rings and an annular connector portion which is disposed between and connects said inner and outer portions of said expander ring body, an axially extending groove projecting into said expander ring intermediate the inner and outer diameters thereof, the said axial groove projecting into said ring from the top axial end thereof and terminating in spaced relationship to the bottom axial end thereof, said expander ring having an axial extent which is at least as great as a major portion of the combined axial extents of the piston rings so that said single annular area of sealing engagement will have an axial extent which is at least as great as a major portion of the combined axial extents of the inner surfaces of the piston rings and said expander ring will be extruded radially into the gap in each piston ring to hold each piston ring against circumferential movement relative to the other.

Re. 31,006

PROCESS FOR THE DEMONSTRATION AND DETERMINATION OF REACTION COMPONENTS HAVING SPECIFIC BINDING AFFINITY FOR EACH OTHER

Antonius H. W. M. Schuurs, and Bauke K. van Weemen, both of Oss, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Reissued No. Re. 29,169, dated Apr. 5, 1977, Ser. No. 652,362, Jan. 26, 1976.

Original No. 3,791,932, dated Feb. 12, 1974, Ser. No. 221,447, Jan. 27, 1972. Continuation-in-part of Ser. No. 762,120, Sep. 24, 1968, Pat. No. 3,654,090. Application for reissue Mar. 2, 1978, Ser. No. 882,821

Int. Cl.[3] G01N *33/54*

U.S. Cl. 435—7 10 Claims

1. Process for the demonstration and determination of a component of the reaction between a bindable substance selected from the group consisting of an antigen, a hapten, and a low molecular substance, and a protein capable of binding said bindable substance specifically, said protein being selected from the group consisting of an antibody and a specific binding protein, comprising the steps of:

a. providing a given quantity of the binding partner of the component to be determined, which binding partner is in an insoluble form;

b. reacting the component to be determined with its binding partner to form a **first** reaction mixture having a **first** solid phase and a **first** liquid phase;

c. separating the **first** solid phase from the **first** liquid phase;

d. adding to said **first** solid phase a given quantity of a coupling product **[[**of**]]** **formed by coupling** the component to be determined with an enzyme, **[[**and**]]** **which quantity of coupling product is at least sufficient to react with all of the binding partner of the component to be determined, to form a second reaction mixture having a second solid phase and a second liquid phase;**

e. separating the second solid phase from the second liquid phase; and

[[e**]]** **f.** determining the enzyme activity of the **second** solid phase which is a measure of the quantity of reaction component to be determined.

PLANT PATENTS

GRANTED AUGUST 3, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,871
ORCHID PLANT

Maurice Lecoufle, and Michel Vacherot, both of Boissy St. Leger, France, assignors to Les Petite Fils et Fils de Vacherot & Lecoufle, Boissy St. Leger, France

Filed May 21, 1980, Ser. No. 151,944
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. The new and distinct variety of orchid plant substantially as herein shown and described, characterized by a strong habit of plant growth and abundant production of flowers having petals and sepals of excellent texture and substance and a distinctive lemon yellow color of the petals and sepals contrasting with a ruby red labellum.

4,872
AVOCADO TREE

Harold E. Kendall, Goulds, Fla., assignor to Kendall Brothers Trust, Goulds, Fla., G. David Parrish, Harold E. Kendall, Jr., Peter H. J. Kendall, Trustees

Filed Jan. 13, 1981, Ser. No. 224,827
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—44 **1 Claim**

1. A new and distinct cultivar of avocado tree as described and shown.

PATENTS

GRANTED AUG. 3, 1982

ERRATA

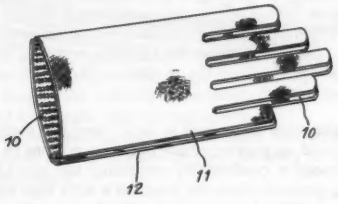
For CLASS	See PATENT NO.
015–250	4,342,126
376–272	4,342,620
376–298	4,342,621
523–353	4,342,670
525–054	4,342,671
524–029	4,342,672
523–427	4,342,673
523–177	4,342,674
524–762	4,342,675
524–458	4,342,676
523–116	4,342,677
524–539	4,342,678
524–401	4,342,679
524–100	4,342,680
524–108	4,342,681
523–179	4,342,682
549–229	4,342,693
549–273	4,342,694
549–315	4,342,695
549–331	4,342,696
549–396	4,342,697
549–505	4,342,698
549–259	4,342,699
525–326	4,342,857
373–094	4,342,878
378–099	4,342,914
378–004	4,342,916
378–034	4,342,917
422–186	4,342,918

PATENTS

GRANTED AUGUST 3, 1982

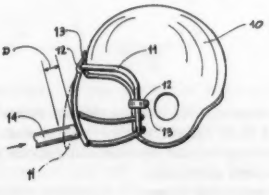
GENERAL AND MECHANICAL

4,342,121
HOT MILL GLOVE
Maris Vistins, Coshocton, Ohio, assignor to Norton Company, Worcester, Mass.
Filed Sep. 5, 1980, Ser. No. 184,594
Int. Cl.[3] A41D *19/00, 19/02*
U.S. Cl. 2—161 R **9 Claims**



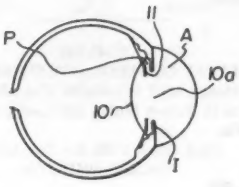
1. A glove comprising a knitted outer shell having an inner palm face and inner back face and having a lining fabric material adhered to said inner palm face of said shell and a separate fabric lining material adhered to said inner back face of said shell.

4,342,122
PROTECTIVE HEADGEAR
Carl J. Abraham, Great Neck, and Malcolm Newman, Huntington, both of N.Y., assignors to Alan H. Levine, Great Neck, N.Y.
Filed Oct. 14, 1980, Ser. No. 196,889
Int. Cl.[3] A41D *13/00*
U.S. Cl. 2—424 **4 Claims**



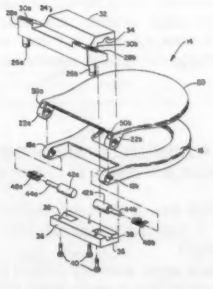
1. A protective headgear comprising:
(a) a helmet,
(b) a face mask of flexible material, and
(c) means securing the face mask to the helmet,
(d) the helmet and face mask being so constructed that when a force in the range of 200 to 1000 pounds is applied in a direction generally perpendicular to the plane of the face of the wearer, there is a deflection of the face mask with respect to the helmet in the range of two to four inches, the deflection being unaccompanied by fracture of the mask, and the face mask remaining attached to the helmet throughout the time the force is applied.

4,342,123
INTRAOCULAR LENS SYSTEM
Howard V. Gimbel, 103 - 1711 - 4 St. SW., Calgary, Alberta T2S 1V7, Canada
Filed Jun. 3, 1980, Ser. No. 156,072
Claims priority, application Canada, Feb. 20, 1980, 346023
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 **5 Claims**



1. An artificial intraocular lens system constructed and arranged to be implanted within an opening in the capsular bag of the normal lens of an eye immediately adjacent the iris of the eye to supplant or replace the normal lens of the eye, comprising an optical lens portion formed in circular, convex configuration of biologically tolerable, optically suited material so as to have an optical axis, and attachment means extending generally radially outwardly from said lens portion at spaced positions about its periphery for engaging parts of the capsular bag surrounding said opening so as to secure said lens portion in the opening, said attachment means including, at at least one position about said periphery, two cooperating clip members which extend generally radially outwardly and are axially separatable so as to receive and secure therebetween a part of the capsular bag surrounding said opening, such that the respective clip members bear against inner and outer surface portions of said capsular bag to assist in securing said lens portion in position in said opening, said clip members being of resilient material and projecting radially beyond the periphery of said lens portion, said clip members being normally coplanar with one clip member lying inside the other.

4,342,124
SEAT AND COVER ASSEMBLY FOR A TOILET BOWL
Candelario Paredes, 6608 Briarhaven Dr., Dallas, Tex. 75240
Filed Sep. 24, 1980, Ser. No. 190,374
Int. Cl.[3] A47K *13/00, 13/12*
U.S. Cl. 4—234 **4 Claims**



4. A seat and cover assembly for a toilet bowl, said assembly comprising a seat member; a cover member for said seat mem-

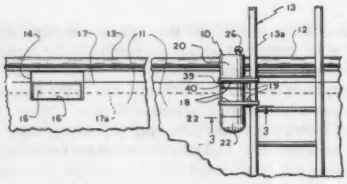
ber; means for mounting said seat member and said cover member relative to said bowl for pivotal movement between an upright position and a lowered position, said mounting means including a mounting block assembly secured to said bowl, a pair of hinge pins extending in corresponding openings formed in said mounting means, said seat member and said cover member, and a torsion spring extending around each hinge pin with one free end of each spring in engagement with said seat member and with the other free end of each spring in engagement with said cover member for biasing said seat member towards said cover member and said cover member towards said seat member in all positions of said members; and means for quick releasably securing said cover member in said upright position.

4,342,125

WATER LEVEL CONTROL FOR SWIMMING POOLS

George R. Hodge, 8528 SE. Merrit Way, Jupiter, Fla. 33458, assignor to G. Robert Hodge and Louise S. Hodge, both of Jupiter, Fla.

Filed Jul. 9, 1980, Ser. No. 167,126
Int. Cl.³ E04H *3/18*
U.S. Cl. 4—508 **5 Claims**



1. A water level control for swimming pools comprising a vertically elongated casing adapted for mounting on a ladder or pool edge, said casing being of interfitting component construction providing a partial horizontal partition dividing the same into upper and lower chambers with free passage of water therebetween, and a partially open bottom permitting water flow to the pool, a ball cock valve and vertically slidable float assemblage secured to said partition and positioned in said upper chamber with the water inlet thereof protruding into said lower chamber and the water outlet thereof being above said partition, said partition having an elongated transverse aperture providing a water passage therethrough, and lateral offsets intermediate the ends of said aperture providing positioning means for said ball cock valve and float assemblage, means detachably coupling said water inlet with a pressure source of water supply, said means comprising conduit means extending downwardly through said partition laterally and upwardly to said water inlet with the upper end of said conduit means protruding from the top of said casing and carrying means for detachable coupling with said pressure source of water supply, and said casing having air vent means communicating with said upper chamber and external side markings aligned with the internal high and low water levels which relate to the closing and opening respectively of said ball cock valve.

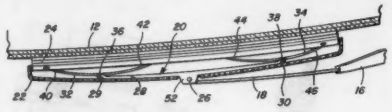
4,342,126

WINDSHIELD WIPER BOOT

Edward F. Neefeldt, c/o Brown, 67-17 53rd Dr., Maspeth, N.Y. 11378

Filed Dec. 2, 1980, Ser. No. 212,266
Int. Cl.³ B60S *1/04, 1/38*
U.S. Cl. 15—250.42 **3 Claims**

1. A windshield wiper assembly protection means, said protection means comprising a cover being of only one piece of material and devoid of other components and being elongated along a longitudinal dimension having a section generally of an inverted curved shaped broad channel and the cover being foreshortened along a transverse dimension having a section generally of an inverted curved shaped narrow channel, said cover having at a domed portion thereof an aperture for communicating therethrough an extended portion of a blade retaining structure to just protrude and pass through in close proximity thereof while having distal therefrom a free edge forming a skirt and extending substantially around the entire length of the cover for sleeving over and directly contacting an entire windshield wiper assembly distal from a windshield wiper blade element so as to permit a length of the wiper blade to extend



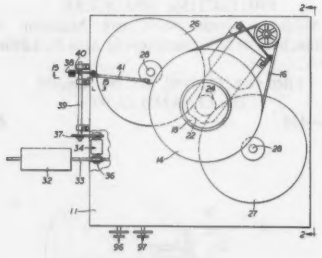
from the wiper blade itself so as to come into contact with a windshield, an interior surface of the cover along its longitudinal dimension conformably interfitting and engagingly contacting generally the entire length of a fairly rigid support arm of the windshield wiper assembly for the wiper blade element, said cover serving to effectively protect the structural components of said windshield wiper assembly from the outside environment while not interfering with a contact between a windshield surface and a windshield wiper blade forming a portion of said windshield wiper assembly.

4,342,127

APPARATUS FOR FORMING RAILROAD SPIKES AND THE LIKE

Simeon D. Weaver, Birmingham, Ala., assignor to Azcon Corporation, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 181,995
Int. Cl.³ B21G *3/12, 3/16*
U.S. Cl. 10—57 **18 Claims**



1. In apparatus for forming railroad spikes and the like from a heated stock bar and having drive means, bar feed means, a head forming die, and movable and stationary gripper dies, the improvement comprises:

(a) a supporting frame,

(b) a stop member mounted for reciprocatory movement to a position to contact the forwardmost end of said bar and limit forward movement thereof,

(c) means supporting said movable gripper die for movement selectively to an open position relative to one side of said bar adjacent said forwardmost end and to a closed position in engagement with said one side so that the opposite side of said bar adjacent said forwardmost end is forced into engagement with said stationary gripper die,

(d) a bending finger mounted for reciprocatory movement alongside said stop member to a position to engage said opposite side of said bar adjacent said forwardmost end and move said forwardmost end to a position spaced from

said stationary gripper die while said movable gripper die is in said open position, to provide a laterally bent end portion at said forwardmost end upon movement of said movable gripper die to said closed position,

(e) means for forming a tapered end portion on said bar at a predetermined location spaced longitudinally from said forwardmost end,

(f) actuator means for moving said head forming die selectively to a first position spaced forwardly of said bar and to a second position with said head forming die engaging said laterally bent end portion at said forwardmost end and forcing said laterally bent end portion toward engagement with said movable gripper die to in turn move said movable gripper die toward gripping engagement with said bar so that the gripping force exerted by said movable gripper die is proportional to the force exerted by said head forming die whereby a composite finished spike is formed in a single stage operation, and

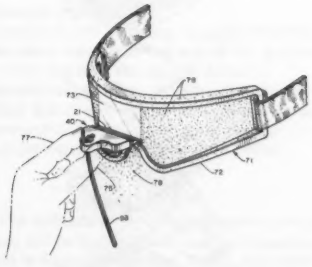
(g) means for ejecting said finished spike in response to movement of said movable gripper die away from said closed position.

4,342,128

WIPER DEVICE FOR REMOVAL OF SNOW AND LIQUID FROM SKI GLASSES OR GOGGLES

Thomas P. Doyle, 3872 Highway 49, Placerville, Calif. 95667

Filed Sep. 25, 1980, Ser. No. 190,749
Int. Cl.³ B60S *1/14*
U.S. Cl. 15—245 **2 Claims**



1. A wiping apparatus for the removal of snow and debris from goggles and eyeglass lenses comprising:

a handle portion having a pair of opposed front and rear walls, a top wall, a bottom wall, and a pair of opposed side walls, at least one of said side walls being indented and adapted to receive the finger of an operator during time of use, said handle portion being about ¼ inches thick, about 1⅛ to 2⅛ inches wide, and about 1 to 2 inches high,

an elastic wiper blade secured to the long dimension of said top wall thereof, said blade being sized in elongation such that the entire blade contacts the lens during removal process,

said apparatus including a through bore in the handle portion from the front wall to the rear wall,

a light reflective lenticular surface on one of the opposed front and rear walls, said through bore also penetrating said reflective surface,

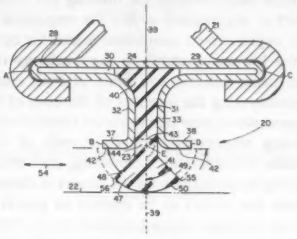
and a retainer cord adapted to encircle the neck of a wearer secured through said throughbore.

4,342,129

WIPING INSERTS FOR WINDSHIELD WIPERS, SQUEEGEES AND THE LIKE

William E. Thompson, R.R. 1, Box 89, Middletown, Ind. 47356

Filed Aug. 21, 1980, Ser. No. 180,044
Int. Cl.³ B60S *1/38*
U.S. Cl. 15—250.4 **5 Claims**



1. A windshield wiper insert suitably arranged for receipt by the superstructure of a conventional windshield wiper blade assembly for wiping a windshield, said windshield wiper insert comprising:

an elongate guide strip member suitably designed and arranged for receipt by said superstructure;

an elongate, flexible wiping strip having a first section secured within said elongate guide strip member and having a second section laterally protruding beyond said elongate guide strip, said second section including an enlarged wiping portion having a sector shaped lateral cross section including two substantially flat sides corresponding to the radii of said sector shaped lateral cross section and a continuous and uniformly curved surface having a circular arc shape and extending between said two sides and defining a corresponding edge at each intersection of said curved surface and each side; and

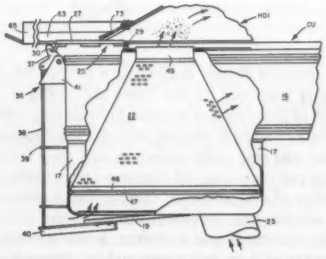
means located directly above said two flat surfaces for controlling the movement of said enlarged wiping portion, said means adapted to alternately contact each of said flat surface to position one edge and then the other edge at a point of contact against said windshield as said windshield wiper is operating.

4,342,130

TRAVELLING SUCTION CLEANING APPARATUS

Amos S. Clark, Jr., Lewisville; James R. McMordie, and Michael D. Walker, both of Winston-Salem, all of N.C., assignors to The Bahnson Company, Winston-Salem, N.C.

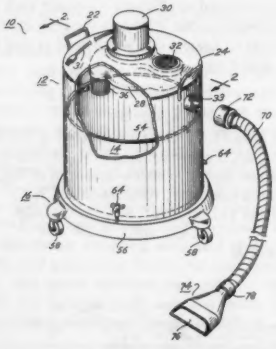
Filed Jan. 27, 1981, Ser. No. 228,825
Int. Cl.³ A47L *9/20*
U.S. Cl. 15—312 A **15 Claims**



1. An improved travelling suction apparatus for cleaning lint from machines including a horizontal trackway mounted over

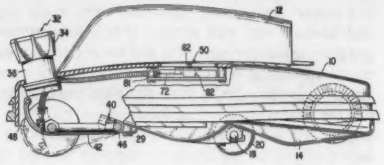
the machines to be cleaned, and a cleaner unit that is moved along the trackway, the cleaner unit including a housing, a pair of suction tubes that respectively depend from the housing at opposite sides of the trackway, means within the housing for drawing lint-laden air upwardly through the tubes and into the housing, lint collection chambers at opposite sides of the housing that respectively receive lint-laden air from said tubes, and a screen within each chamber for filtering lint from the air to cause the lint to accumulate within the respective chambers, wherein the improvement comprises: means for automatically removing the lint accumulated in the trackway comprising, each screen being annular and open at both ends, conduit means interconnecting the interiors of the ends of the screens with the respective suction tubes, covers respectively mounted to the housing adjacent the opposite ends of the annular screens, means for movably connecting the covers to the cleaner housing to normally hold the covers in closed positions and to permit the covers to be opened to permit lint to be extracted from said opposite ends of the screens, means located at a lint removal station along the trackway for opening said covers, and hood means stationarily mounted at said lint removal station for applying suction to remove substantially all of the lint from within the screens while said covers are open.

4,342,131
FIREPLACE CLEANER
Janet G. Reid, 51646 Lakeland Dr., Elkhart, Ind. 46514
Filed Sep. 15, 1980, Ser. No. 187,500
Int. Cl.³ A47L *5/36*
U.S. Cl. 15—327 D **9 Claims**



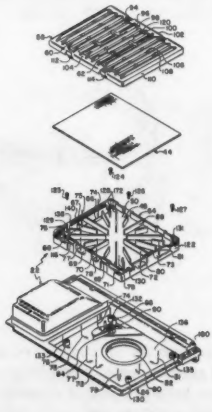
1. A fireplace cleaner comprising a base frame, a container removably supported on said frame and having a bottom and side wall of heat resistant material for receiving ashes from the fireplace, a removable housing having a top disposed over said container and side walls seated on said base frame and surrounding and enclosing said container and extending above the upper edge of said container, conduit means connected at one end to said housing above said container and communicating with the interior of said container, a scoop mounted on the other end of said conduit means and in communication therewith, and vacuum generating means secured to said top for drawing fireplace ashes from said scoop through said conduit means and depositing the ashes in said container.

4,342,132
CARPET PILE SENSOR AND INDICATOR FOR CARPET CLEANER
Charles T. Fromknecht, Anderson, S.C., assignor to The Singer Company, Stamford, Conn.
Filed Oct. 1, 1980, Ser. No. 192,777
Int. Cl.³ A47L *5/34*
U.S. Cl. 15—339 **12 Claims**



8. For use in a carpet cleaner having a chassis and a nozzle height adjusting mechanism including wheels mounted on offset ends of an axle formed with a central portion journalled in the chassis, a pile height and density sensor plate pivoted to such central portion and extending therefrom past one of said wheels for sensing the height and density of the pile of the floor covering on which the cleaner rests.

4,342,133
VACUUM CLEANER AIR FLOW SENSING ARRANGEMENT
Keith G. Minton, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Mar. 12, 1981, Ser. No. 243,066
Int. Cl.³ A47L *9/19*
U.S. Cl. 15—339 **13 Claims**



6. A vacuum cleaner comprising:
(a) a first wall disposed adjacent to a fan inlet and having at least one aperture therein communicating with the fan inlet;
(b) a second wall having a wall portion spaced from the first wall and in an axial direction toward a bag chamber to establish a cavity therebetween;
(c) a secondary filter spaced in an axial direction from an outer surface of the wall portion toward the bag chamber;
(d) said second wall at least in part providing apertures located adjacent to its outer periphery so as to provide proportional air flow into the cavity along a plurality of paths and thereby providing a radial inward flow of the air within the cavity toward the at least one aperture communicating with the fan inlet;

(e) said second wall and said secondary filter unit establishing an air distribution chamber for distributing air flow from the secondary filter toward the apertures located adjacent to the outer periphery of the second wall so as to maintain proportional air flow into the cavity; and

(f) air flow sensor including a pivotally mounted vane disposed within the cavity so as to be in at least one of the plurality of paths of air flow and movable thereby to indicate a predetermined air flow value.

4,342,134

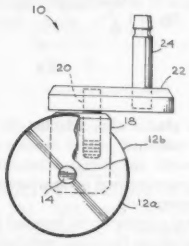
CASTER ASSEMBLY

Dale Mickelson, 829 Zurich Dr., Lake Arrowhead, Calif. 92317

Filed Jun. 15, 1979, Ser. No. 48,995

Int. Cl.³ B60B *33/00*

U.S. Cl. 16—31 R **3 Claims**



1. In a caster assembly supporting an object to be rolled, comprising:

(a) one single caster wheel unit;

(b) a support member, mounted in pivotal relation with the caster wheel unit and substantially accommodated within the periphery thereof, having a bore passing vertically therein, laterally offset from the axis of the caster wheel unit;

(c) an intermediate member;

(d) first means for pivotal mounting, laterally offset from the axis of the caster wheel unit one end of the intermediate member above and onto the support member;

(e) second pivotal means, being laterally offset from the axis of the caster wheel unit and the first pivotal means, extending upward from the intermediate member for individual engagement with the object to be rolled.

4,342,135

DEVICE FOR MODERATING MOVEMENT OF LID

Hiroshi Matsuo, and Nobuaki Omata, both of Hiroshima, Japan, assignors to Sharp Corporation, Osaka and Nifco Inc., Kanagawa, both of, Japan

Filed Sep. 30, 1980, Ser. No. 192,644

Claims priority, application Japan, Oct. 3, 1979, 54-136148[U]

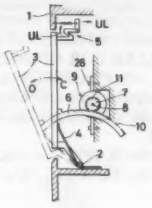
Int. Cl.³ E05F *3/14*; E05D *1/02*

U.S. Cl. 16—82 **3 Claims**

1. A device for moderating the movement of a lid, comprising:

a rotary member composed of a rotary shaft, a roller integrally formed at one terminal side of said rotary shaft and adapted to be held in frictional engagement with a member imparted motion by the lid and at least one disc formed at the other terminal side of said rotary shaft; and

a housing composed of a pair of halved portions connected to each other through the medium of a hinge, said halved portions being provided with complementary engaging means adapted to come into mutual engagement when the halved portions are rotated about said hinge toward each other and brought into intimate contact with each other, and said halved portions containing semicircular grooves adapted to form empty spaces for accommodating the rotary shaft and the discs of said rotary member and



damping oil when the halved portions are joined to each other.

4,342,136

APPARATUS FOR FASTENING INSIDE HANDLE COVER TO AUTOMOBILE DOOR

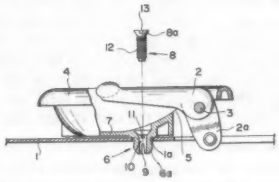
Kanae Okabe, Hiroshima, and Hiroo Murayama, Yokohama, both of Japan, assignors to Yuhshin Co., Ltd., Minato and Nifco Inc., Yokohama, both of, Japan

Filed Jul. 22, 1980, Ser. No. 170,440

Claims priority, application Japan, Jul. 23, 1979, 54-100541[U]

Int. Cl.³ A47B *95/02*

U.S. Cl. 16—115 **5 Claims**



1. In combination, a door handle cover with an integrally formed expandable fastener means extending therefrom adapted to be inserted through a preformed aperture in an automobile door panel, and a generally cylindrical headed pin adapted to be driven into engagement with the fastener means without rotation to thereby expand the fastener means, said pin and said fastener means adapted to cooperate with one another whereby rotation of the pin causes axial displacement thereof; said fastener means comprising a body having an upper end generally coinciding with a portion of the door handle cover and a lower end adapted to be inserted in the aperture and radially expanded, the body having an axial opening extending therethrough with one end of the opening disposed at the upper end of the body defining a first diameter and the other end of the opening at the distal end of the lower end defining a second diameter, the first diameter being substantially greater than the second diameter, the lower end of the body having a plurality of slots dividing the lower end into radially flexible prongs, the upper end of the body having inwardly directed protrusions intermittently disposed about the circumference of its axial opening defining a first set of ridges of limited axial extent; the pin having a head and a shank with radially outwardly extending protrusions defining a second set of ridges, one of said sets of ridges helically disposed, said second set of ridges on said pin having a major diameter substantially equal to said first diameter to positively engage said first set of ridges with said second set of ridges, whereby said door handle cover is easily installed in said automobile door panel by inserting the lower end of said fastener in said preformed aperture and axially driving said pin by impacting one end thereof to radially expand and thereby secure the cover to the panel, and

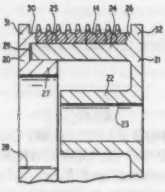
whereby the cover is easily removed by axial displacement of the pin due to rotation thereof and withdrawal of the lower end.

4,342,137

OPENING ROLLER FOR OPEN-END SPINNING APPARATUS

Brian J. Ennis, Sowerby Bridge, and Kenneth Lydall, Huddersfield, both of England, assignors to The English Card Clothing Company, England

Filed May 3, 1979, Ser. No. 35,592
Int. Cl.³ D01G *19/10*
U.S. Cl. 19—97 **9 Claims**



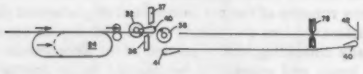
1. A card-clothed opening roller for use in open-end spinning apparatus comprising a roller body, a pair of oppositely facing abutments on said body, and a helical coil of metallic wire type card-clothing located on an external cylindrical surface of said body, between said pair of abutments, each said abutment having an annular inner end face in the shape of a helix with an acclivity between its maximum and minimum axial displacements, said annular face being complementary in shape to the adjacent end of said card-clothing coil, the adjacent end flank of said coil engaging with said helical annular face of each said abutment and the extremity of said coil at that end engaging with said acclivity, so that there are no recesses between said roller body and the ends of said coil.

4,342,138

OVAL BALE-TIE WIRE AND PROCESS OF MAKING THEREOF

Emil Simich, Chicago, Ill., assignor to A. J. Gerrard & Company, Des Plaines, Ill.

Filed Aug. 31, 1979, Ser. No. 71,680
Int. Cl.³ B65D *63/02*
U.S. Cl. 24—27 **2 Claims**



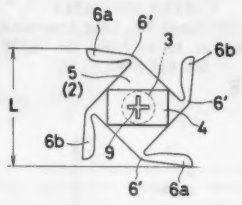
1. A bale-tie wire, including in combination:
an ovalized cross-sectional shaped body portion extending the length thereof, and
ovalized cross-sectional shaped looped end portions formed at each end of said body portion and wherein each of said looped end portions are curved in opposite directions with respect to each other, transverse to the major axis of the oval cross-section of the wire, with each of said looped end portions including a leg portion extending inwardly from said looped end portions towards the middle of said body portion, with each of said looped end portions bent out of the plane of each respective loop in opposite directions thereof, said ovalized cross-sectional shaped body portion providing predeterminedly positioning of the bale-tie wire about a bale and permitting alignment and engagement of each of said looped end portions together to form a thief knot to secure the baled material, said thief knot after engagement of the ovalized cross-sectional shaped looped end portions possessing between 2%–5% increase in joint strength from a round bale-tie wire.

4,342,139

ONE-PIECE QUICK RELEASE CLIP

Toshie Tanaka, Machida, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Jul. 31, 1980, Ser. No. 174,394
Int. Cl.³ F16B *19/00*
U.S. Cl. 24—292 **7 Claims**



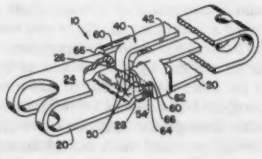
1. A one-piece plastic clip, adapted for fixing an object having a partially confined groove therein and a slot in communication therewith and being substantially C-shaped in cross-section to a panel having an aperture therein of a predetermined shape, comprising:
an insertion piece adapted to be inserted into the groove of said C-shaped object from one end thereof, said insertion piece including a central portion and four flexible wings projecting outwardly from four positions equidistantly spaced on the outer boundary of the central portion, said flexible wings being arranged in pairs and each pair being separated by a distance greater than the width of the groove of the C-shaped object,
a neck portion projecting from the center of one surface of said insertion piece and adapted to extend through and pass along the slot communicating with the groove of the C-shaped object, and
an oblong head piece formed at the leading end of said neck portion, substantially conforming to the shape of said aperture in said panel,
whereby when said insertion piece is inserted in said groove and said oblong head piece is aligned and passed through said aperture the C-shaped object and the panel may be fixedly secured relative to one another by rotation of the clip to a position where the oblong head piece is no longer in alignment with said aperture and whereby said position is defined by said wings coacting with said groove in said C-shaped object.

4,342,140

RESILIENT FASTENER HAVING KEEPER WITH LOCK

Robert L. Lacey, Palatine, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 31, 1980, Ser. No. 202,558
Int. Cl.³ A45F *5/02*
U.S. Cl. 24—373 **12 Claims**



1. A resilient fastener adapted to accept and retain one or

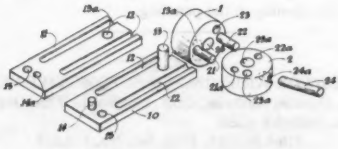
more elongated members in confined relation including an elongated base portion having aperture means intermediate its extremities, a first-retaining portion overlying said base portion and resiliently connected to said base portion adjacent one end thereof to accept said one or more elongated members, keeper means adapted to cooperate with an acceptable within said aperture means in said base portion, said keeper means carried by said first retaining portion at its second end opposite the one end connected to said base portion, spring means for actuation of said keeper means, a second locking portion overlying said base portion and resiliently connected to said base portion at its second end opposite said one end with the free end of said second locking portion lying in opposition to said keeper means, said free end and said keeper means including cooperative locking means whereby engagement of said keeper means with said aperture means activates said locking means which prevents unintentional disengagement of said keeper from said base portion aperture means.

4,342,141

BULLET MOLD DEVICE

James J. Graham, 503 - 36th Ave., Greeley, Colo. 80631, and Edward Earl, 1316 Edwina Pl., Loveland, Colo. 80537

Filed Feb. 6, 1980, Ser. No. 119,122
Int. Cl.[3] C06B *21/02*; F42B *33/10*
U.S. Cl. 29—1.22 **7 Claims**



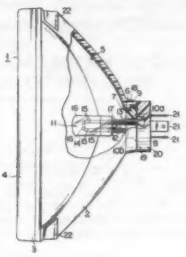
1. A bullet ball tool for casting, shearing and molding bullet balls comprising, in combination, a separable base having a cylindrical cavity therein adapted to receive molten lead in the cavity for forming a lead stick, a pair of circular flat sided dies, with a first one of said dies having a first pivot pin means secured to and extending at a right angle from a flat side thereof, and the second of said dies having a transverse opening formed therein for adapting said second die to be thereby mounted rotatably and removably upon the pivot pin means of the first die by the second die being removably mounted with its said opening slidably over the said pivot pin of the first die for adapting the second die to be pivotally moved on said first die pivot pin means and with the dies in flat side abutment with each other, an upstanding second pivot pin means secured to the base plate, the first die having a radial opening formed in its periphery for permitting said first die to be mounted on said plate second pivot pin means by said first die radial opening being slidably removably mounted on said second pivot pin means, each of the dies having an aligned equal radial distance transverse like opening adapted upon a certain pivotal position of the second die on the first pivot pin means of the first die to be aligned and to receive a lead stick inserted therethrough both transverse openings when so aligned, handle means secured to the periphery of the second die for thereby effecting manual pivotal rotational movement of the second die on the first pivot pin means of the first die in a direction to cause a cutting of the lead stick by such movement of one of said dies with relation to the other of the dies upon such pivoting and upon a lead stick insert into both of said transverse openings.

4,342,142

METHOD FOR MANUFACTURING SEALED-BEAM TYPE ELECTRIC BULB

Yasuhiro Nieda, Yokosuka, and Kiyokazu Honda, Zushi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 12, 1980, Ser. No. 186,623
Claims priority, application Japan, Sep. 17, 1979, 54-117904
Int. Cl.[3] H01J *9/18*
U.S. Cl. 29—25.13 **9 Claims**



1. A method of manufacturing a sealed-beam type electric bulb comprising:

a first step of inserting external lead wires of a light source having a filament inside into a plurality of through holes formed in a plastic base plate, and filling said through holes with a flowable adhesive;

a second step of shifting said light source so that said filament is positioned at a predetermined position;

a third step of curing said adhesive to bond said external lead wires to said plastic base plate after shifting said light source, thereby fixing the light source to said plastic base plate;

a fourth step of inserting said plastic base plate with said light source mounted thereon into an opening formed at the rear end portion of a plastic reflector with a reflecting inner surface, and fixing said plastic base plate at the rear end of said reflector, thereby positioning said light source within said reflector; and

a fifth step of attaching a lens at the front end of said reflector so as to close an opening at the front end of said reflector.

4,342,143

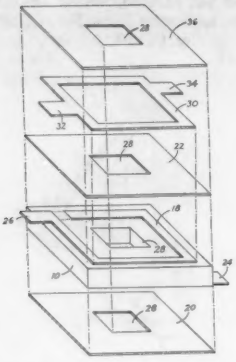
METHOD OF MAKING MULTIPLE ELECTRICAL COMPONENTS IN INTEGRATED MICROMINIATURE FORM

Thomas A. Jennings, 518A Oak Summit Apts., Glenside, Pa. 19038

Continuation of Ser. No. 711,990, Aug. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 707,881, Jul. 22, 1976, abandoned, which is a continuation of Ser. No. 439,350, Feb. 4, 1974, abandoned. This application May 1, 1978, Ser. No. 901,994
Int. Cl.[3] H01G *4/30*; H01F *41/04*
U.S. Cl. 29—25.42 **4 Claims**

1. A method of making an integrated one-piece miniature series circuit having a central opening comprising at least a capacitor and a helical inductor coil which are integrated with one another and which are disposed so that one overlies the other, said capacitor and said coil both having central openings and being contained within the same transverse area; said method comprising the steps of providing a substrate, applying and bonding to each other a plurality of superposed films on said substrate to define said series circuit, each said films having a central opening, alternate layers of said films being comprised of electrically conductive material and dielectric material, said layers of conductive material being separated from one another by said layers of dielectric material, intercon-

necting some of said adjacent overlying layers of conductive material to provide said helical inductor coil, one of the layers of conductive material defining a first capacitor plate, the layer of conductive material defining the end of turn of said helical coil which is closest to said first capacitor plate comprising a



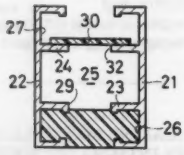
second capacitor plate whereby said first and second capacitor plates define said capacitor, and providing electrical connection means at the other end turn of said inductor coil and from said first capacitor plate so that said inductor coil and said capacitor comprise an integrated one piece series circuit.

4,342,144

METHOD OF MANUFACTURING A THERMALLY INSULATING SASH BAR

Nobushige Doguchi, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 14, 1980, Ser. No. 196,787
Claims priority, application Japan, Oct. 22, 1979, 54-135128
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—155 R **6 Claims**



1. A method of manufacturing a thermally insulating sash bar, comprising the steps of:

(a) providing an elongated hollow metallic sash bar including a pair of spaced outer members and a pair of spaced first and second inner members extending between said outer members so as to define therebetween a pair of longitudinally extending first and second channels, respectively;

(b) introducing a mass of thermally insulating synthetic resin into and curing the same within said first channel to fill the latter with the cured thermally insulating synthetic resin;

(c) then forming a longitudinal gap in and along each of said first and second inner members;

(d) covering the longitudinal gap in said second inner member with a thermally insulating strip; and

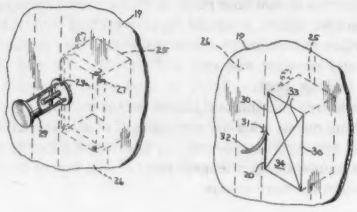
(e) then introducing a mass of the thermally insulating synthetic resin into and curing the same within said second channel to fill the latter with the cured thermally insulating synthetic resin.

4,342,145

PANELING CUTTER TOOL

Alan W. Kotchy, 628 Garrison Ave., Nekoosa, Wis. 54457

Division of Ser. No. 41,252, May 21, 1979, Pat. No. 4,286,384.
This application May 27, 1981, Ser. No. 267,466
Int. Cl.³ B26D *3/00*
U.S. Cl. 29—407 **2 Claims**



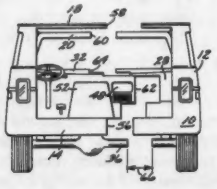
1. A method of cutting an opening in sheet paneling after the paneling is secured in place over a backing member having an opening, which comprises before the paneling is in place securing a flux responsive metal member around the periphery of said opening in the backing member for locating an opening to be cut in the paneling, securing the paneling in place over the backing member with said metal member located behind said paneling, moving a metal detecting device over the front of the paneling to locate the metal member, then marking an outline of the location of the metal member on the front of the paneling, thereafter cutting a groove in the front of the paneling along the outline marked on the front of the paneling, and removing the portion of the paneling surrounded by the cut to expose the opening in the paneling.

4,342,146

METHOD FOR WIDENING AN AUTOMOTIVE VEHICLE

Dale M. Hanson, Anaheim, Calif., assignor to Wide One Corporation, Anaheim, Calif.

Filed Feb. 25, 1980, Ser. No. 124,535
Int. Cl.³ B23P *6/00*; B62D *21/14*
U.S. Cl. 29—416 **5 Claims**



1. Method for widening an automotive vehicle of the type having transversely oriented components which include: a floor and transverse frame members, a fire wall adjacent the forward extremity of said floor, a transverse first dash mount having a first pair of hood mounts, a first upper hood panel mounted to said dash mount and a hood pivotally mounted to said hood mounts; a heater/air conditioner assembly mounted to said firewall to the right of the longitudinal centerline of said vehicle; and an engine oriented along said longitudinal centerline, said method comprising the steps of:

temporarily demounting said hood from said hood mounts;

cutting through said components of said automotive vehicle along a predetermined cut line extending the complete length of said vehicle and including a cut which extends through said floor and said transverse frame members along a line located to the right of said engine, said cut line

further including a cut through said fire wall and said dash mount, said cut through said fire wall being located to the right of said heater/air conditioner assembly;

removing and discarding said first upper hood panel;

moving the cut portions of said vehicle apart a predetermined stretch distance;

attaching floor and frame member spacer means between the cut portions of said floor and frame members, respectively, to bridge said stretch distance therebetween;

attaching fire wall spacer means between the cut portions of said fire wall to bridge said stretch distance therebetween;

attaching dash mount spacer means between the cut portions of said first dash mount to bridge said stretch distance therebetween;

attaching transversely extending adapter means to said dash mount, said adapter means having a substitute pair of hood mounts in replacement of said first pair of hood mounts;

attaching to said dash mount and said adapter means a second upper hood panel having hood mount openings;

remounting said hood through said hood mount openings to said substitute pair of hood mounts; and

mounting a pair of hood side panels on opposite sides of said hood and extending downwardly from said upper hood panel, each to bridge one-half of said stretch distance.

4,342,147

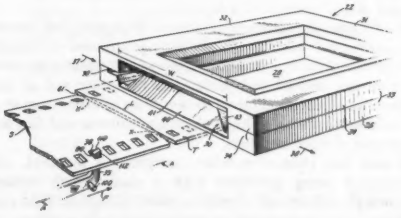
METHOD FOR LOADING PRE-CLOSED SLIDE MOUNTS

Edwin R. Thompson, Stamford, Conn., assignor to Forox Corporation, Stamford, Conn.

Division of Ser. No. 952,409, Oct. 18, 1978, Pat. No. 4,250,641. This application Jul. 24, 1980, Ser. No. 172,066

Int. Cl.³ B23P *17/00*

U.S. Cl. 29—417 **2 Claims**



1. In the method of automatically inserting film transparencies into pre-closed slide mounts each having a pocket therein for receiving the inserted transparency wherein the slide mounts are positioned one at a time in a loading station, a film strip is advanced endwise toward the respective slide mount in the loading station, the leading end portion of the film strip is cut off to form a film transparency in readiness to be loaded into the respective slide mount, the film strip is bowed longitudinally along the film strip for providing longitudinal stiffness in the film strip, and the freshly cut end of the bowed film strip is used for pushing the film transparency through an entranceway into the pocket in said respective slide mount, the improvement including the steps of:

cutting off the leading end portion of the film strip while said leading end portion is entirely outside of said entranceway;

then advancing the bowed film strip endwise toward the respective slide mount in the loading station along a forward stroke distance equal to the length of the film transparency plus an additional extent of forward travel sufficient for pushing the transparency completely through said entranceway into said pocket for loading the transparency into the slide mount; and

retracting said bowed film strip endwise away from the respective slide mount in the loading station by an amount of rearward travel sufficient for completely removing the film strip from the loaded slide mount;

thereby enabling pre-closed slide mounts to be used in a fast-loading cycle having entranceways which are only slightly wider than the width of the transparency to be inserted therein.

4,342,148

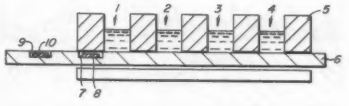
CONTEMPORANEOUS FABRICATION OF DOUBLE HETEROSTRUCTURE LIGHT EMITTING DIODES AND LASER DIODES USING LIQUID PHASE EPITAXY

Anthony J. SpringThorpe, Richmond, and Agnes Margittai, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 4, 1981, Ser. No. 231,501

Int. Cl.³ H01L *21/208*

U.S. Cl. 29—569 L **5 Claims**



1. A process for contemporaneously making double heterostructure light (LZD) emitting diodes and double heterostructure lasers using liquid phase epitaxy comprising:

filling a first liquid phase epitaxy (LPE) reservoir with a liquid material having composition appropriate for growth therefrom of an epitaxial laser first confining layer;

filling a second LPE reservoir with a liquid material having a composition appropriate for growth therefrom of an epitaxial laser active layer;

filling a third LPE reservoir with a liquid material having a composition appropriate for growth therefrom of an epitaxial laser second confining layer;

filling a fourth LPE reservoir with a liquid material having a composition appropriate for growth therefrom of an opitaxial laser capping layer;

cooling a housing containing the reservoirs at a predetermined rate;

moving a boat containing a leading source crystal and a trailing substrate crystal to a first station at which the source crystal underlies the first reservoir for sufficient time to saturate the composition in the first reservoir and to promote epitaxial growth of a first LED confining layer on the source crystal;

moving the boat to a second station at which the substrate crystal underlies the first reservoir for sufficient time to promote epitaxial growth thereon of a laser first confining layer and the source crystal underlies the second reservoir and experiences epitaxial growth thereon of a LED active layer;

moving the boat to a third station at which the substrate crystal underlies the second reservoir for sufficient time to promote epitaxial growth thereon of a laser active layer and the source crystal underlies the third reservoir and experiences epitaxial growth thereon of an LED second confining layer;

moving the boat to a fourth station at which the substrate crystal underlies the third reservoir for sufficient time to promote epitaxial growth thereon of a laser second confining layer and the source crystal underlies the fourth reservoir and experiences epitaxial growth thereon of a LED capping layer;

moving the boat to a fifth station at which the substrate crystal underlies the fourth reservoir for sufficient time to promote epitaxial growth thereon of a laser capping layer; and

subsequently fabricating light emitting diodes from the source crystal and laser diodes from the substrate crystal.

4,342,149

METHOD OF MAKING VERY SHORT CHANNEL LENGTH MNOS AND MOS DEVICES BY DOUBLE IMPLANTATION OF ONE CONDUCTIVITY TYPE SUBSEQUENT TO OTHER TYPE IMPLANTATION

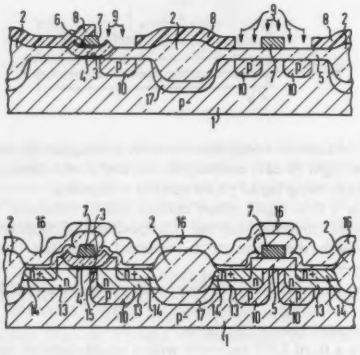
Erwin Jacobs, Vaterstetten; Ulrich Schwabe, and Dezso Takacs, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 30, 1980, Ser. No. 202,347

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947350

Int. Cl.³ B01J *17/00*; H01L *29/78*

U.S. Cl. 29—576 B **4 Claims**



1. A method for the manufacture of MNOS memory transistors with very short channel lengths utilizing a silicon substrate of a first conductivity type provided with a structured field oxide SiO_2 layer for the separation of the active transistor regions comprising the steps of:

(a) forming a silicon oxide layer effective as a tunnel oxide on a surface of the silicon substrate of the first conductivity type;

(b) applying a silicon nitride layer serving as a memory layer over the entire surface of the tunnel oxide layer;

(c) structuring and retaining the memory nitride layer in the region of the memory transistor while selectively removing it elsewhere;

(d) executing a surface-wide oxidation to form a gate oxide for the non-memory transistor and an oxynitride layer on the memory nitride;

(e) precipitating a polysilicon layer and structuring the polysilicon layer as a gate electrode in the region of the memory transistor and of the non-memory transistor;

(f) selectively applying a first layer of photosensitive resist to form an implantation mask over the field oxide regions and over the gate electrode of the memory transistor;

(g) implanting ions of the first conductivity type into selected regions of the substrate;

(h) stripping the photo-sensitive resist mask and diffusing ions of the first conductivity type into the substrate;

(i) selectively applying a second layer of photosensitive resist to form an implantation mask in the region of the gate oxide for the non-memory transistor and of the gate oxide and oxynitride layer of the memory transistor;

(j) implanting low energy ions of a second conductivity type forming source/drain zones;

(k) stripping the photosensitive resist mask;

(l) implanting higher energy ions of the second conductivity type thereby forming n+ regions active as source/drain zones and for generating the short channel; and

(m) precipitating a protective intermediate oxide over the surface of the substrate, generating contact holes, and fabricating metal contacts.

4,342,150

PROCESS AND DEVICE FOR FILLING WITH A HARDENABLE FILLER GAPS WHERE CORROSIVE ATTACK CAN OCCUR IN TUBE AND FIN TYPE HEAT EXCHANGERS

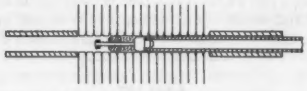
Karl Mack, Singen, Fed. Rep. of Germany, and Zdenek Maly, Kreuzlingen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 24, 1980, Ser. No. 115,088

Claims priority, application Switzerland, Feb. 1, 1979, 1001/79

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—726 **15 Claims**



1. An apparatus for filling the ring-shaped gaps formed between the tubes and fins of a tube and fin type heat exchanger with a corrosion protective filler material wherein the collars of the stacked fins form a first substantially cylindrical passage along a first axis comprising:

(a) a first closure member when in use sealingly positioned within said first substantially cylindrical passage and slidably movable from one end of said passage to the other end of said passage at a first rate;

(b) a second closure member spaced from said first closure member and when in use sealingly positioned within said first substantially cylindrical passage and slidably movable from one end of said passage to the other end of said passage at a second rate different from said first rate so as to form a variable volume chamber between said first and second closure members;

(c) said first closure member comprises a mandrel, said mandrel being provided with a shaft which extends through said second closure member along said first axis;

(d) means on at least one of said first closure member and said mandrel for charging said variable volume chamber with said corrosion protective filler material; and

(e) said first closure member and said second closure member adapted to be moved at said first rate and said second rate respectively through said first substantially cylindrical passage such that said variable volume chamber formed between said first closure member and said second closure member gradually contracts so as to force said corrosion protective filler material from said variable volume chamber into said ring-shaped gaps.

4,342,151

BLANK AND PROCESS FOR THE FORMATION OF BEAM LEADS FOR IC CHIP BONDING

John R. Guild, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

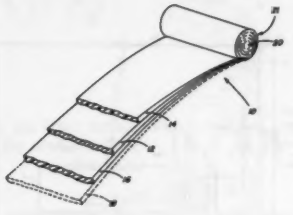
Division of Ser. No. 49,662, Jun. 18, 1979, Pat. No. 4,247,623. This application Aug. 19, 1980, Ser. No. 179,612

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—827 **2 Claims**

1. In a process for the manufacture of frames containing beam leads suitable for bonding to an integrated circuit chip, the process comprising the steps of imagewise exposing and developing a positive-working resist on one side of a flexible, electrically conductive metallic layer to form a protective

resist on the beam lead portions of the metallic layer, and a negative-working resist on the opposite side of the metallic layer to form a window-bearing spacer holding the beam leads in a desired orientation, etching through the metal foil to form the beam leads, inserting an integrated circuit chip into the spacer, and bonding the beam leads to the inserted chip,

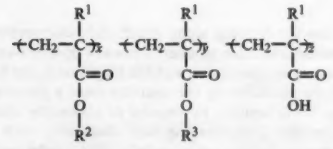


the improvement wherein

said negative-working resist comprises

(a) as a binder, a mixture of at least

(i) a polymer having recurring units with the structure



wherein each R^1 is independently hydrogen or methyl, R^2 is alkyl containing from about 3 to about 5 carbon atoms, R^3 is alkyl containing from 1 to about 2 carbon atoms, and x, y and z are mole percents and are about

$30 \leqq x \leqq 70$

$30 \leqq y \leqq 60$

$1 \leqq z \leqq 5$;

and

(ii) polymethylmethacrylate in an amount of from 0 to about 75 weight percent of the mixture; said binder having a glass transition temperature between about 50° and about 100° C.;

(b) a photopolymerizable monomer selected from the group consisting of triethylene glycol diacrylate, tetraethylene glycol diacrylate, and a mixture of pentaerthyritol tetraacrylate and either 1,6-hexanediol diacrylate or tripropylene glycol diacrylate; and

(c) a photoinitiator composition, and wherein

the exposing and developing of the negative-working resist includes the step of fully polymerizing essentially all monomer in the exposed areas, whereby outgassing of the negative-working resist during the bonding step is substantially reduced.

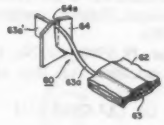
4,342,152
METHODS OF TERMINATING AND CONNECTORIZING CABLES

Thomas J. Taylor, Gahanna, Ohio, assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 30, 1980, Ser. No. 116,704
Int. Cl.³ H01R *43/02*
U.S. Cl. 29—860 **16 Claims**

1. A method of connectorizing a terminated end of a given length of flat cable having two laterally disposed, overlying-/underlying arrays of insulated ribbon-like conductors, with the major plane of each conductor lying within the major plane of the cable, wherein said two arrays are respectively laminated between a common insulative center film and an associated one of two opposite side outer insulative films, and wherein two laterally disposed isolating strips of non-conductive material are respectively positioned on opposite sides of said center film in alignment, and interposed between the latter and the adjacent one of said two arrays of conductors at each predetermined termination site along said cable, as fabricated, said isolating strips being of a material that will not bond to said conductors, said method comprising the steps of:

stripping the insulation from the conductors along short, longitudinally disposed end regions thereof at the terminated end of the cable, said stripping step further includ-



ing the step of peeling at least a substantial longitudinally disposed segment of each otherwise stripped conductor end region in each array from the then co-extensive and contacting one of said isolating strips so as to completely expose each such conductor end segment;

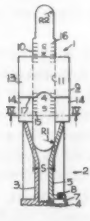
angularly twisting at least a forward portion of the respectively stripped conductor end segments a predetermined number of degrees from their original orientation within the cable, and

securing the twisted end portions of the conductors to respectively aligned mating elements of an associated connector so as to form an interconnected flat cable-connector assembly.

4,342,153
PITCH DIAMETER GAUGE FOR A VARIABLE SPEED PULLEY

Saxon Cole, Webster Grove, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Aug. 18, 1980, Ser. No. 179,255
Int. Cl.³ G01B *5/18, 5/24*
U.S. Cl. 33—169 B **6 Claims**



1. A gauge for measuring the widthwise deviation between the opposing walls of a tapered groove forming the rim of an adjustable V-belt pulley, comprising:

a body member including means adapted to be abutably engaged with the outer edges of the walls of the groove;

a gauge bar slidably mounted within said body member having an end portion of predetermined width;

indicia on said gauge bar readable against corresponding indicia on said body to express the deviation of said walls

as determined by the penetration depth of the gauge bar within the groove upon engagement of the end portion with the opposing walls of the groove;

said gauge bar having a second end portion of a predetermined width sized to be selectively engaged in a second tapered groove of a different widthwise dimension than said first mentioned groove; and

second indicia on the gauge bar readable against said indicia on the body to express the deviation of the walls of said second groove as determined by the penetration depth of the gauge bar within said groove upon engagement of the second end portion with the opposing walls of said second groove.

4,342,154

MEASURING BRIDGE

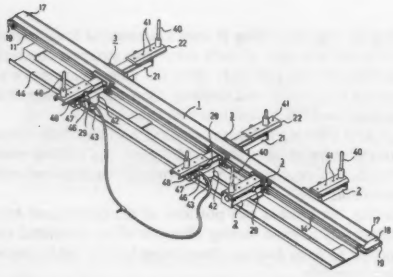
Pierre Legrand, Soumagne, Belgium, assignor to Applied Power Inc., Milwaukee, Wis.

Filed Apr. 29, 1980, Ser. No. 145,322

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1979, 2922804

Int. Cl.³ G01B *5/14*

U.S. Cl. 33—180 AT **23 Claims**



1. A measuring bridge for determining the orientation of reference points on a motor vehicle, said measuring bridge including:

a single bending-resistant measuring bar and a plurality of measuring vehicles, supporting means extending downwardly from said measuring bridge for supporting the same for movement relative to said motor vehicle so that said measuring bridge may be oriented,

first and second track means located on said measuring bar and disposed respectively on the opposite sides thereof and extending longitudinally along said bar in general parallelism to each other,

a plurality of said measuring vehicles being mounted respectively on each of said first and second track means,

each measuring vehicle including support means movable longitudinally along its respective track means independently of the support means of the other measuring vehicles, one end of each measuring vehicle being coupled to its respective support means and the opposite end being spaced laterally from said track means, said measuring vehicles extending generally normally relative to its respective track means and outwardly from said measuring bar so that the area around the opposite ends of said measuring vehicles and between the measuring vehicles mounted on the same track means is unobstructed by track means to permit ready access to said motor vehicle,

an additional track means being formed on each of said vehicles and extending generally perpendicularly to said first and second track means, and measuring means mounted on each of said additional track means for lateral movement relative to said measuring bar.

4,342,155

SIGN-MAKING APPARATUS

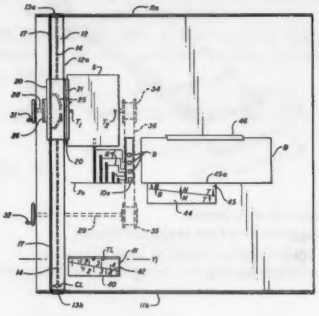
Gregory R. Waldron, West Oneonta, N.Y., assignor to Scott Machine Development Corporation, Walton, N.Y.

Continuation of Ser. No. 905,748, May 15, 1978, abandoned.

This application Apr. 27, 1981, Ser. No. 257,663

Int. Cl.³ B41B *1/00*; B32B *31/20*; G09F *7/16*

U.S. Cl. 33—184.5 **42 Claims**



1. Apparatus for forming signs which aids an operator to form an operator-selectable number of rows of operator-selectable characters of an operator-selectable height on a sign blank having a height selectable by the operator from a plurality of different sign blank heights, by transfer of successive characters from a carrier sheet carrying said characters, with said rows of characters having operator-selectable predetermined spacings between rows and operator-selectable predetermined spacings relative to a pair of edges and a centerline of said sign blank, comprising, in combination: a base having a surface for supporting said sign blank and means for locating one of said edges of said sign blank relative to said base in a predetermined reference position in a first direction; a carriage mechanism carried on said base including a carriage having means for gripping said carrier sheet and means for constraining movement of said carriage to a plurality of predetermined discrete positions relative to said base, said discrete positions being spaced apart a predetermined incremental distance in said first direction; and means for positioning said carrier sheet in said first direction to an operator-selectable gripping position relative to said carriage and said base so that movement thereafter of said carriage to various of said discrete positions will locate characters on said sheet in said first direction in accordance with said predetermined spacings.

4,342,156

CYLINDER DRYER WITH BOUNDARY LAYER TURBULENCE

Wilhelm Wanke, Donauschwabenstrasse 47, 7920 Heidenheim, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,332

Claims priority, application Fed. Rep. of Germany, May 11, 1979, 2918985

Int. Cl.³ F26B *3/24*

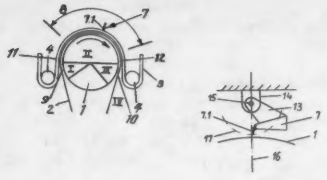
U.S. Cl. 34—41 **14 Claims**

1. In a method of drying a web of material running between a drying cylinder and a traveling covering cloth tending to form an air boundary layer impeding heat exchange and humidity removal, the improvement comprising in combination the steps of:

avoiding excessive wear of the covering cloth by locating a baffleplate at a distance from the covering cloth within a domain of the boundary layer;

promoting a heat exchange and humidity removal through turbulence by impacting air from the boundary layer against a front surface of the baffleplate at a distance from

the covering cloth, causing an exchange of air in the boundary layer and in meshes of the covering cloth, and



providing the front surface with a varying configuration across the covering cloth.

4,342,157

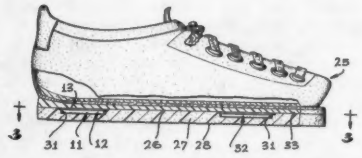
SHOCK ABSORBING PARTIALLY LIQUID-FILLED CUSHION FOR SHOES

Sam Gilbert, 17965 Seabreeze, Pacific Palisades, Calif. 90272

Filed Aug. 11, 1980, Ser. No. 177,076

Int. Cl.³ A43B *13/20, 21/26*

U.S. Cl. 36—29 **16 Claims**



1. An impact-absorbing cushion adapted for containment within a cavity in a shoe sole, said cavity having sides, a top and a bottom, comprising:

a sealed bladder comprising a thin, flexible, resilient, nonporous shell, having walls, a top and a bottom closely conforming to the walls, roof and floor of said cavity, said bladder containing a liquid under pressure, whereby the walls, top and bottom of said shell are maintained in continuous intimate force-transmitting contact with the walls, roof and floor of said cavity.

4,342,158

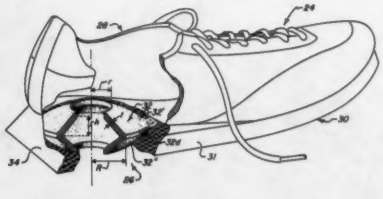
BIOMECHANICALLY TUNED SHOE CONSTRUCTION

Thomas A. McMahon, 65 Crest Rd., Wellesley, Mass. 02181, and Peter R. Greene, 77 Lanark Rd., Apt. 1, Brookline, Mass. 02146

Filed Jun. 19, 1980, Ser. No. 160,967

Int. Cl.³ A43B *21/26, 21/30*

U.S. Cl. 36—35 R **59 Claims**



1. A shoe that is biomechanically tuned for an optimal response for the person wearing the shoe and a selected use of the shoe has an upper and a sole that each extend in a generally horizontal direction and includes a heel construction comprising a main spring formed of a resilient material, said main spring being structured to flex repeatedly in a generally vertical direction transverse to said horizontal direction over a relatively small maximum vertical displacement while providing a high degree of vertical compliance during each complete loading cycle associated with said use and also structured to provide a high degree of resistance to lateral shear, said main spring being structured to transiently store the impact force on said heel construction during each said vertical flexure and then returning said transiently stored energy to the person with a high level of efficiency.

4,342,159

METATARSAL GUARD SAFETY SHOE

Robert G. Edwards, Manchester, Mo., assignor to Interco Incorporated, St. Louis, Mo.

Filed Jul. 21, 1980, Ser. No. 170,647

Int. Cl.³ A43C *13/14*

U.S. Cl. 36—77 R **6 Claims**

1. In a safety shoe, a sole; a firm, force-resisting toe cap; an upper attached to the sole and extending over the toe cap and the metatarsal area of the shoe; a lining layer below the upper in the metatarsal area, a unitary metatarsal guard of relatively stiff, resilient material confined between the lining and the upper to underlie the upper, the guard having sufficient resiliency to spread under impact of heavy blows upon the top of it, the guard being shaped to have its forward edge overlie the toe cap, and to extend from the toe cap upward to at least substantially overlie the metatarsal area of the shoe, and to curve downward along the sides of such area below the upper, its side edges being displaced from the sole and free of the sole so as not normally to contact the sole and to be laterally movable relatively thereto, and a padding of energy-absorbent material secured to the shoe below the metatarsal guard, the arrangement being such as to permit the guard to spread and thereby to distribute blows applied to the top of the guard over a substantial area to reduce the damaging effect thereof upon a wearer's foot.

4,342,160

FOOTWEAR

Lancelot P. Clark, Street, England, assignor to Clarks Limited, Street, England

Division of Ser. No. 94,921, Nov. 16, 1979, Pat. No. 4,295,238. This application May 28, 1981, Ser. No. 267,860

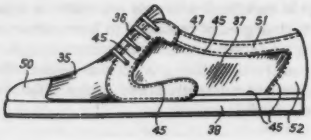
Claims priority, application United Kingdom, Nov. 17, 1978, 45098/78

Int. Cl.³ A43C *13/08*

U.S. Cl. 36—83 **6 Claims**

1. An article of footwear having an upper whereof one part comprises two panels arranged to extend respectively on opposite sides of the foot of the wearer, a sock for underlying the foot, the side panels being preformed with the sock from flexible sheet material either integrally with each other or in separate pieces which are connected together to form a single component, and a plastics sole unit moulded integrally with the remaining part of the parts of the upper on to said one part and

the sock, said remaining part or parts of the upper overlapping marginal portions of the outer but not the inner faces of the



side panels, whereby the sock and side panels lie wholly in the inner surface of the article.

4,342,161

LOW SPORT SHOE

Michael W. Schmohl, Willibaldstr. 30A, D-8500 Nuremberg, Fed. Rep. of Germany, assignor to Michael W. Schmohl, Aachen, Fed. Rep. of Germany

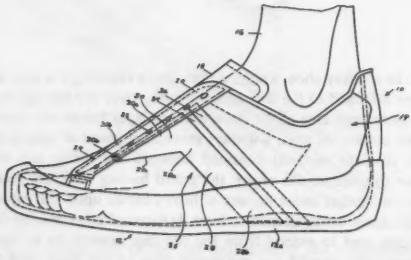
Continuation of Ser. No. 962,459, Nov. 20, 1978, abandoned.

This application Mar. 9, 1981, Ser. No. 241,814

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1977, 2752301

Int. Cl.³ A43B *5/00, 11/00*

U.S. Cl. 36—114 **6 Claims**



1. A low shoe comprising a low upper formed from a first material, a sole, a lacing strip affixed directly to said upper and extending generally forwardly and downwardly and generally rearwardly and upwardly on an area of said upper adapted to overlie the instep of a foot received in the shoe, and a bandage formed from a second material which is substantially less extensible than said first material, said bandage including an elongated portion and a connecting portion extending generally laterally forward of said elongated portion at a first end thereof, said elongated portion having a substantially constant width transverse to the direction of elongation thereof and said elongated portion being longer in the direction of elongation than said width, a first edge of said connecting portion remote from said elongated portion extending laterally of said elongated portion and being affixed to said lacing strip, said elongated portion extending generally downwardly and rearwardly from said connecting portion to a second end opposite from said first end, said second end being affixed to a rearward portion of said shoe, the dimension of said connecting portion in said direction of elongation of said elongated portion being greater at the juncture of said connecting portion with said elongated portion than the dimension of said connecting portion in such direction at the forwardmost tip of said connecting portion, wherein a second edge of said connecting portion extends from the forwardmost tip of said connecting portion to the juncture of said connecting portion with said elongated portion, and said second edge of said connecting portion is substantially straight and slopes away from said lacing strip to the juncture of said connecting portion with said elongated portion.

4,342,162

DEVICE FOR PLANING A BODY OF GROUND MATERIAL

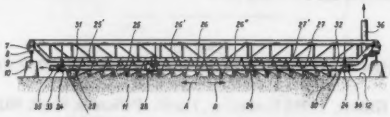
Cornelis Spaans, Delft, and Herman H. Nijhof, Purmerend, both of Netherlands, assignors to B.V. Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg, Wormerveer, Netherlands

Filed Jan. 11, 1980, Ser. No. 111,383

Claims priority, application Netherlands, Jan. 12, 1979, 7900266

Int. Cl.³ E02F *3/06, 5/00*

U.S. Cl. 37—1 **7 Claims**



1. A device for planing a body of ground material comprising: at least one tube rotatably mounted in a supporting construction capable of being moved along guide means in such a manner that the tube may be moved in horizontal position and rotated with the aid of driving means parallel to itself over the surface of the body of ground material to be planed, at least one helical blade being wound about said tube, said helical blade merging into a scoop at the discharge end thereof as regards the direction of conveyance, said scoop having the same radial dimension as the helical blade projecting with respect to the tube, an opening being provided in the wall portion of the tube partially surrounded by said scoop, and the tube being hollow at least at the location of said scoop, and means for connecting said hollow part of the tube to conveyor means for discharging therefrom the ground material removed from the top surface of said body of ground material and introduced into said hollow part of the tube by said scoop.

4,342,163

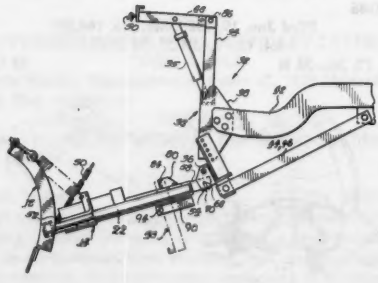
APPARATUS FOR MOUNTING A SNOWPLOW BLADE TO A VEHICLE

Ralph W. Hoekstra, Stillman Valley, Ill., assignor to Swenson Spreader Company, Lindenwood, Ill.

Filed Sep. 2, 1980, Ser. No. 183,284

Int. Cl.³ E01H *5/06*

U.S. Cl. 37—231 **18 Claims**



1. Apparatus for joining a frame member for carrying a snowplow blade or the like to a vehicle-mounted lift frame or the like, comprising: at least one mounting bracket member rigidly attached to said lift frame and including a pair of parallel, generally vertical walls supporting a generally horizontal

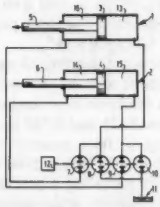
mounting rod therebetween, means forming at least one mounting ear on said blade-carrying frame, said mounting ear being of lesser width than the space between said parallel, generally vertical walls of said mounting bracket member and having a generally vertically oriented slot therein of predetermined depth, said slot being rotatably engageable with and over said generally horizontal mounting rod to define a rotatable joint, a retaining pin, and means in said mounting bracket member for removably receiving said retaining pin generally vertically above said mounting rod and substantially parallel therewith, the space between said retaining pin receiving means and said mounting rod being sufficient to allow relative rotation of said mounting ear with respect to said mounting rod but of lesser extent than said predetermined depth of said slot in said mounting ear and further including a lift arm link mounted at an upper portion of said lift frame and positioned for transmitting motion between a lifting piston and said blade-carrying frame member to effect lifting and lowering of a snowplow blade or the like mounted to said blade-carrying frame member, means for removably mounting said lift arm link to said lift frame including a lift frame bracket formed in said lift frame and cooperating apertures in said bracket and in said lift arm for receiving a pin, thereby rotatably mounting said lift arm link to said lift frame, and means on said blade-carrying frame for removably mounting said lift arm link to serve as a stand for holding said mounting ear above a ground surface at a level substantially similar to the level of said mounting rod to facilitate interengagement therebetween.

4,342,164

COUNTERBALANCING HYDRAULIC SYSTEM

Josephus A. M. Claassen, Nuenen, Netherlands, assignor to Hydraudyne B.V., Boxtel, Netherlands

Continuation of Ser. No. 891,768, Mar. 30, 1978, abandoned.
This application Oct. 9, 1979, Ser. No. 82,745
Int. Cl.³ E02F *9/22*; F15B *13/06, 13/09*
U.S. Cl. 37—73 **3 Claims**



1. A hydraulic system for resisting a torque couple exerted by a common output member while selectively producing displacement between the common output member and a common base for the hydraulic system while maintaining said torque couple, said common output member having a first end portion anchored in position and an opposite second end portion, which system comprises in combination:

a pair of piston/cylinder devices disposed in parallel and interconnecting said common base and the second end portion of said common output member, each device comprising a cylinder having a piston reciprocable therein and a piston rod connected to said piston whereby each device has a first cylinder space opposite said piston rod and a second cylinder space on the piston rod side of said piston in which said first cylinder space is of greater cross sectional area than is said second cylinder space by an amount equal to the cross sectional area of the piston rod;

a reservoir of hydraulic fluid;

a first pump connected directly between said first cylinder space of said one device and the second cylinder space of the other device for transferring hydraulic fluid back and forth between the first cylinder space of one device and the second cylinder space of the other device;

a second pump connected directly between the first cylinder space of the other device and the second cylinder space of said one device for transferring hydraulic fluid back and forth between the first cylinder space of said other device and the second cylinder space of said one device;

a third pump connected directly between said reservoir and the first cylinder space of said one device for transferring hydraulic fluid back and forth between said reservoir and said first cylinder space of said one device;

a fourth pump connected directly between said reservoir and said first cylinder space of said other device for transferring hydraulic fluid back and forth between said reservoir and said first cylinder space of said other device;

means for operating all of said pumps in unison whereby as said first pump transfers fluid from said second cylinder space of said other device to the first cylinder space of said one device, and third pump transfers fluid from said reservoir to said first cylinder space of said one device, said second pump transfers fluid from said second cylinder space of said one device to the first cylinder space of said other device, and said fourth pump transfers fluid from said reservoir to the first cylinder space of said other device, and vice versa; and

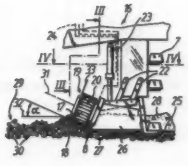
all of said pumps being of the displacer pump motor type and the displacement ratio of said first and third pumps and of said second and fourth pumps being such that said piston rods are extended and retracted in unison without altering the torque couple resisted by the hydraulic system.

4,342,165

TRACK WORKING MACHINE WITH A BALLAST REMOVING AND PLANING DEVICE

Josef Theurer, Vienna, and Manfred Brunninger, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Apr. 1, 1981, Ser. No. 249,952
Claims priority, application Austria, Apr. 16, 1980, 2063/80
Int. Cl.³ E02F *5/22*
U.S. Cl. 37—104 **11 Claims**



1. In a track working machine for removing excess ballast from a ballast bed arranged to support a track defining a plane and for planing the ballast of the bed, which comprises a frame, undercarriages supporting the frame on the track for movement of the machine in a working direction, and a ballast removing and planing device mounted vertically adjustably on the frame between the undercarriages: the improvement of the device including

(a) an endless ballast removing chain comprised of a multiplicity of chain members extending substantially parallel to the track plane,

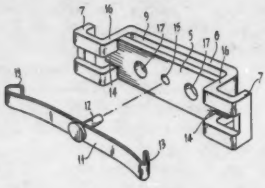
(b) two chain reversing points about which the chain is trained for movement in a plane extending substantially vertically to the track plane, and

(c) a drive for moving the chain in the substantially vertically extending plane and having an axis extending substantially parallel to the track plane,

(1) the chain having an upper and a lower stringer, the lower chain stringer facing away from the frame and projecting

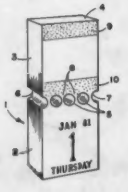
forwardly of the upper chain stringer in the working direction.

4,342,166
TOOL FASTENING
William M. Johnson; Alan Lindsay, and Harry Klasssens, all of Maidstone, Australia, assignors to Ralph McKay Limited, Victoria, Australia
Filed Jul. 14, 1980, Ser. No. 168,746
Int. Cl.[3] E02F 9/28
U.S. Cl. 37—142 A 3 Claims



1. A mounting bracket for an earth engaging tool comprising a body portion a recess within said body portion adapted to receive a complementary shaped shaft of an earth engaging tool a clip attachable externally to said body portion of said bracket by resilient end lugs and a retaining pin, secured to said clip intermediate said ends, said pin being adapted to seat within aligned holes of the tool shaft and said body portion when said tool and said bracket are assembled, to retain the shaft in said recess and in which the body portion incorporates shoulders adapted to protect the end lugs of said clip.

4,342,167
SELF-MOUNTING DISPLAY CALENDAR
Michael Stanard, 402 Lee St., Evanston, Ill. 60202
Filed Nov. 25, 1980, Ser. No. 210,313
Int. Cl.[3] G09D 3/04; G09F 1/08
U.S. Cl. 40—121 8 Claims



1. A self-mounting display calendar comprising:
a substantially rectangular calendar pad of multiple paper sheets bound at their top end and presenting a face side, a back side and two opposing edges, said pad having an upper mounting segment and a lower printed segment separable from each other along a tear line provided in an intermediate perforated segment of the pad between notches in each of said edges, said tear line being formed by two-dimensional perforations which are sufficient in number to remove substantially more than one-half the paper as measured along the tear line between the notches;
a lightweight casing which is a packaging replica bearing distinctive indicia of a package design, said casing being mounted over the top end of said pad and extending downwardly around the face and back sides and two edges of the pad to a position overlapping the intermediate perforated segment while leaving the lower printed segment exposed, said casing being adhered to at least a portion of the front and back sides of the pad; and
a double-faced adhesive mounting means attached to the outer back side of the combined pad and casing with sufficient strength per unit area to self-mount and hold the pad and casing onto a flat, vertical supporting surface against the total weight of the pad and casing and also against the force needed to detach one paper sheet from the pad.

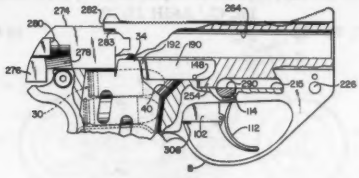
4,342,168
FLEXIBLE STREET SIGN BLANK
Donald W. Schmanski, P.O. Box 1298, Carson City, Nev. 89701
Filed Jan. 12, 1981, Ser. No. 224,270
Int. Cl.[3] G09F 15/00
U.S. Cl. 40—607 6 Claims

1. A flexible resin and fiber composite street sign blank adapted for attachment to a rigid bracket and sign post combination comprising:
a planar web section having a horizontal side greater in length than a vertical side thereof, said web having a thickness between 0.045 and 0.250 inches and a web fiber content including (i) longitudinal fiber and (ii) fiber material having a transverse fiber component, said web fiber content with resin providing a minimum balanced anisotropic strength parameter in the longitudinal direction of approximately 25,000 psi in said web section and a minimum balanced anisotropic strength parameter in the vertical direction of 5,000 psi; and
an elongate rail section extending along and being integral with said horizontal side of the web section, said rail section having a thickness of at least twice the web thickness and between 0.125 and 0.750 inches and a rail fiber content including (i) fiber material having a transverse fiber component and (ii) longitudinal fibers, said rail fiber content with resin providing a minimum balanced anisotropic strength parameter in the longitudinal direction of 40,000 psi in said rail section and a minimum balanced anisotropic strength parameter in the vertical direction of 5,000 psi, said fiber material with transverse component being continuous between the web and rail sections and along a junction therebetween.

4,342,169
MANUALLY CYCLED PISTOL
Philip R. Lichtman, Newton, Mass., assignor to Nicholas A. Pandiscio, Wayland, Mass., a part interest
Continuation of Ser. No. 3,373, Jan. 15, 1979, abandoned, which is a continuation of Ser. No. 851,451, Nov. 14, 1977, abandoned, which is a division of Ser. No. 699,083, Jun. 23, 1976, abandoned. This application Jul. 2, 1980, Ser. No. 165,640
Int. Cl.[3] F41C 3/00
U.S. Cl. 42—11 5 Claims

1. A manually cycled repeating pistol comprising a frame with a handle, a barrel slidably mounted to the frame so as to be movable lengthwise from a first position in which a cartridge is positioned for firing and a second position in which a cartridge can be ejected from the pistol, a firing mechanism carried by the frame independently of the barrel for firing a

cartridge when the barrel is in its first position, said firing mechanism comprising a trigger pivotally mounted to the frame and movable from a forward non-firing position to a rear firing position, and locking means operable by said trigger for locking said barrel in said first position when said trigger is



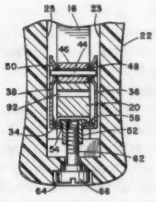
moved out of said forward non-firing position, said locking means comprising a pivot shaft for said trigger, and first and second means carried by said barrel and said pivot shaft respectively for interlocking with one another and thereby locking said barrel in said first position when said trigger is moved out of said forward non-firing position.

4,342,170

FASTENER FOR UNITARY PISTOL HAND GRIP

Guy L. Hogue, Atascadero, and James D. Mason, San Diego, both of Calif., assignors to Hogue Combat Grips, Inc., Los Osos, Calif.

Filed Aug. 18, 1980, Ser. No. 178,948
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—71 P **9 Claims**



1. A fastener for use in combination with a pistol having a cut out butt frame portion with downwardly extending front and rear members and a foot portion extending between the lower ends of said front and rear members, and a unitary hand grip covering said butt frame section, said unitary hand grip having a closed bottom with an opening therein, the fastener comprising:

a yoke having a cross bar below said foot portion and having two upwardly extending side portions straddling the foot portion;

an opening in the upper end of each side portion of said yoke;

a pin extending transversely across the top of said foot portion and engaged in said openings in said side portions of the yoke, the ends of said pin being substantially flush with the outside surfaces of said side portions;

a roller rotatably mounted on said pin and riding on top of said foot portion;

inwardly concave opposed depressions formed in the side portions of said yoke around said openings therein to prevent said pin from disengaging from said yoke;

a threaded sleeve attached to said cross bar and extending downwardly therefrom;

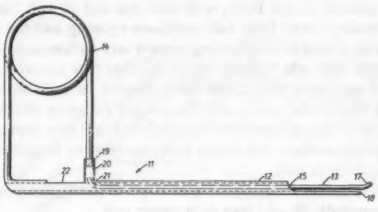
a screw extending through said opening in the bottom of said hand grip and engaging in said threaded sleeve.

4,342,171

FISH HOOK DISGORGER

Michael W. Cripps, Clay Croft, Bracken Rd., and Raymond Lee, 39 Fane Way, both of Maidenhead, Berks, England

Filed May 22, 1981, Ser. No. 266,278
Claims priority, application United Kingdom, May 22, 1980, 8016892
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—53.5 **1 Claim**



1. A fish hook disgorger for disgorging a fish hook and line from a fish, said fish hook disgorger comprising:

an elongated line encircler of heavy gauge wire, a forward end of said line encircler being curved to form a line encircling hook, a rear end of said line encircler terminating in a first end of a bush extending generally perpendicularly to said elongated line encircler;

a tubular plunger within which said line encircler is slideably housed, a front end of said tubular plunger being formed as a V-shaped plunger tip positioned adjacent said line encircling hook, an elongated slot formed in said tubular plunger away from said plunger tip, said bush extending through and being slideable in said slot; and

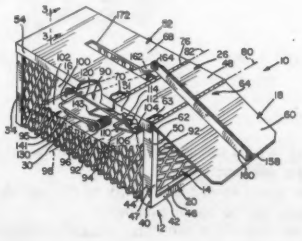
a spring, a first end of said spring being secured in a second end of said bush and a second end of said spring being attached to a rear end of said plunger, said spring forming a handle portion of said fish hook disgorger and biasing said line encircler forwardly in said turbular plunger, whereby rearwood movement of said line encircling hook relative to said plunger tip against said spring bias disgorges the fish hook and line from the fish.

4,342,172

ANIMAL TRAP

Anthony Guanci, 1928 N. Leamington Ave., Chicago, Ill. 60639

Filed Nov. 28, 1980, Ser. No. 211,243
Int. Cl.³ A01M *23/18*
U.S. Cl. 43—61 **8 Claims**



1. In a trap for rodents and the like including a trap device that includes an elongated planar base having on its top side a spring powered striker member, a striker bar portion at one end of same extending crosswise of the base and pivotally mounted adjacent the other end of same, intermediate the ends of the base, to swing about an axis extending transversely of the base and spring biased to swing about said axis from a set

position in which said striker bar is disposed adjacent one end of the base toward a rodent striking position adjacent the other end of the base, and releasable keeper means for holding said striker member in said set position and including bait mounting means for effecting snap release of same when a rodent pursues the bait, the improvement wherein the trap comprises:

an enclosure having side walling defining an opening and that includes a floor, a top wall, and a trap door for closing the enclosure opening,

with the trap device being mounted in said enclosure, and secured to said floor, with said one end of said base extending away from said enclosure opening and the other end of said base extending toward said enclosure opening, and with said base having its top side face upwardly,

said enclosure trap door being hinged to said enclosure adjacent the upper end thereof for swinging movement about an axis substantially paralleling said trap device axis between open and closed positions relative to said enclosure open end,

said trap door having an arm fixed to same that projects upwardly of said trap door upper end,

and a rigid link articulated between said trap door arm and said trap device striker bar portion,

said rigid link being proportioned lengthwise thereof such that when said striker member is in its set position said trap door is open and when said trap door is closed said striker member is held by said link in an upright position,

said enclosure being apertured to receive said link and accommodates the motion thereof relative to said enclosure following said swinging movement of said striker member.

4,342,173

TOY MEDICAL OFFICE

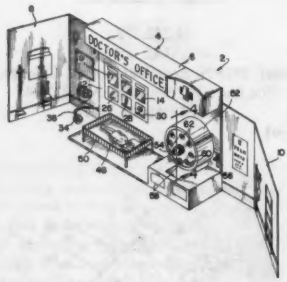
Michiko Otake, Ichikawashi, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,567

Claims priority, application Japan, Dec. 28, 1979, 54/184076[U]

Int. Cl.³ A63H *33/00*

U.S. Cl. 46—1 R **21 Claims**



1. A play toy set simulating a medical ofice comprising:

a housing member;

a display panel having a plurality of discrete display areas mounted on the housing member;

indicia indicative of a particular ailment positioned adjacent each discrete display area;

a plurality of information members positioned behind the display panel and mounted for selective display to the user, each information member providing an indication of a remedy for a particular ailment, and

a simulated diagnostic instrument capable of application to a child or a doll figure and activating the display of an information member on the display panel.

4,342,174

FLOATING TOY

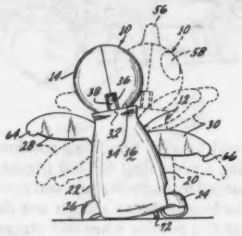
Teruo Nikaido, Tokyo, Japan, assignor to Tomy Kogyo Company, Inc., Tokyo, Japan

Division of Ser. No. 151,434, May 19, 1980, Pat. No. 4,277,908. This application Apr. 16, 1981, Ser. No. 254,966

Claims priority, application Japan, Jun. 19, 1979, 54-83776

Int. Cl.³ A63H *23/10*

U.S. Cl. 46—92 **10 Claims**



1. A toy capable of floating on and propelling itself through a body of water which comprises:

a body;

an elongated member which is generally flat and has an upper surface and a lower surface, said elongated member pivotally mounted to said body at a pivot point along its length approximately equal distance between its ends and capable of pivoting with respect to said body such that both of its ends move in an oscillatory manner back and forth within a plane, said pivot point dividing said member into left and right side portions;

drive means located within the interior of said body and operatively connected to said member and capable of oscillating said member with respect to said body;

both the right and left side portions of said member having a leading edge and a tailing edge positioned between the upper and lower surfaces of said member;

a ridge located in conjunction with the leading edge on the lower surface of both said right and left portions of said member, said ridge being generally triangular in shape in cross section with at least one flat side which is synonymous with the bottom of the lower surface of said member and the angle formed by the flat side and a second side of said triangular shape is an acute angle and is positioned toward the leading edge of said member and the angle formed by said flat side and the third side of the triangular shape is at least about a ninety degree angle.

4,342,175

RADIO CONTROLLED MOTORCYCLE

Joseph S. Cernansky, Manhattan Beach, and Harold E. Garner, Lawndale, both of Calif., assignors to Entex Industries, Inc., Compton, Calif.

Filed Jul. 21, 1980, Ser. No. 170,631

Int. Cl.³ A63H *30/04, 17/36, 17/26*

U.S. Cl. 46—254 **26 Claims**

1. In a motorcycle including a longitudinal frame, a front and rear wheel mounted on the frame, a motor mounted on the frame in driving relationship to the rear wheel, and means for controlling the movement of the front wheel relative to the frame comprising:

pivot means fixed to the frame and providing a first axis, the extension of which intersects the surface upon which the motorcycle is supported, when the latter is upright, at an acute angle;

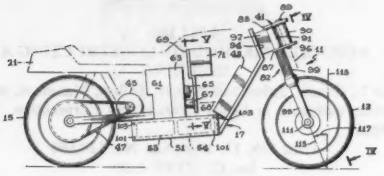
means for supporting the front wheel so that, when the front wheel is aligned with the longitudinal frame, the axis of rotation thereof is perpendicular to, but does not intersect, the first axis and is normally behind the first axis, relative

to the longitudinal frame at the location in which an extension of the first axis and the axis of rotation of the front wheel are closest to one another;

fork means to which the front wheel is rotatably attached;

down tube means fixed to the pivot means; and

means for flexibly connecting the fork means and the down tube means to one another such that the axes thereof are



perpendicular to and intersect the axis of rotation of the front wheel and are parallel to and do not intersect the first axis, comprising

hemispherical ends on the fork means and down tube means, and

means to maintain the hemispherical ends in close abutment and, normally, the down tube means and the fork means in coaxial alignment.

4,342,176

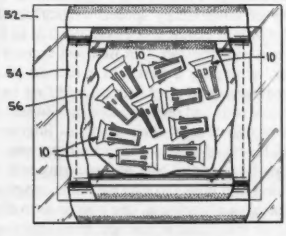
UNIT DOSAGE SYSTEM FOR TREE TRUNK IMPLANTATION TO CONTROL INSECT PESTS AFFLICTING TREES

Warren D. Wolfe, 222 Park Ave., Fremont, Nebr. 68025

Continuation-in-part of Ser. No. 128,258, Mar. 7, 1980, abandoned. This application Jul. 10, 1980, Ser. No. 168,396

Int. Cl.³ A01G *7/06*

U.S. Cl. 47—57.5 **7 Claims**



1. A unit dosage system for tree trunk implantation comprising:

a sealed package assembly containing a plurality of sealed cartridges,

each cartridge having a capsule containing a filling of technically pure dry N-acyl derivative of phosphoramideothioate;

each cartridge being barbed to resist ejection by the tree and being adapted to release the filling into the tree trunk, and

the amount of said filling providing protection against insect pests when said plurality of said cartridges are implanted in pre-bored holes, one for each cartridge, in the trunk of the tree.

4,342,177

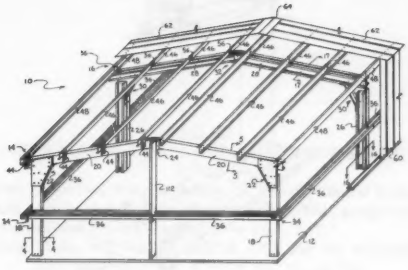
PREFABRICATED STEEL FRAME BUILDING CONSTRUCTION COMPONENTS AND METHODS

Donald A. Smith, 7514-27th NE., Seattle, Wash. 98115

Filed Jun. 18, 1979, Ser. No. 49,624

Int. Cl.³ E04B *7/02;* **F16B** *7/08*

U.S. Cl. 52—93 **24 Claims**



10. A frame for a steel frame building having a peaked roof, said frame comprising:

left and right columns and left and right beams each comprising a length of non-tapered, C-channel steel stock having a web, interior and exterior flanges at right angles to said web, and a pair of inwardly extending lips at right angles to said flanges;

left and right steel plates secured with a plurality of fastener means to respective top portions of said left and right columns and to respective eave end portions of said left and right beams, said steel plates connecting, reinforcing and transferring stress between their respective columns and beams;

a ridge steel plate secured with a plurality of fasteners to the roof ridge portions of said left and right beams, said ridge steel plate connecting, reinforcing, and transferring loading between its respective beams;

left, right, and a pair of ridge stiffener angle members for stiffening and reinforcing said left, right, and ridge steel plates, respectively, and for transferring stress between the respective columns and beams secured to said left, right, and ridge steel plates, said stiffener angle members each having first and second sides disposed at generally right angles with respect to each other, said first side having extensions which extend beyond the ends of said second side and which are disposed at angles with respect to said first side, said second side being secured with a plurality of fastener means to its respective steel plate, said extensions of said left and right stiffener angle members being secured with fastener means to their respective columns and beams which are secured to their respective said left and right steel plates, and the extensions of said pair of ridge stiffener angle members being secured with fastener means to their respective beams which are secured to said ridge steel plate;

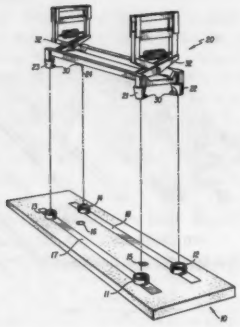
whereby said steel plates and said stiffener angle members eliminate the need for said columns and beams to have complementary angle cut adjacent ends which are structurally joined together by welding, and also eliminate the need for said columns and beams to be tapered.

4,342,178

CARBON ANODE FURNACE COVER CONSTRUCTION

Charles M. Benton, Hawesville; Franklin D. Arnold, Owensboro; George W. Kellogg, Hawesville, and Roger D. Kirk, Owensboro, all of Ky., assignors to National Steel Corp., Pittsburgh, Pa. and Southwire Co., Carrollton, Ga.

Filed Feb. 8, 1980, Ser. No. 119,918
Int. Cl.[3] B66C *1/66*; F23M *7/00*
U.S. Cl. 52—125.5 11 Claims



1. A cover construction for use with a carbon anode baking ring furnace which is subject to repeated heat cycling, said cover construction comprising:

a. an insulative cement cast into the form of the cover;

b. at least one metal beam embedded longitudinally within said insulative cement such that the upper surface thereof is exposed;

c. pickup means, connected to the exposed upper surface of the at least one metal beam embedded in the hardened cement, said pickup means including a hollow metal pipe section having at least one slot means arranged in a side wall of said pipe section for engaging a pickup device; and

d. a multiplicity of elongate needle means, substantially uniformly dispersed throughout said insulative cement in random orientation, for reinforcing said insulative cement.

4,342,179

DEVICE FOR ANCHORING A BUILDING

Claud A. Hill, 2706 E. Contention Mine Rd., Phoenix, Ariz. 85032

Filed Jul. 1, 1980, Ser. No. 165,143
Int. Cl.[3] E02D *27/32*, *5/74*
U.S. Cl. 52—155 4 Claims

1. A device for anchoring a frame supporting rail to a platform at a construction site wherein the rail is provided with holes spacedly positioned along its length, said device comprising:

an elongated hollow collar means,

said collar means being formed at one end to engage along substantially its complete end surface axially over a hole in the rail at an angular relationship to the rail's longitudinal axis,

said one end of said collar means being provided with a protrusion for engaging a surface of the rail for orienting and angularly positioning said collar means with the rail,

said angular relationship spacing the other end of said collar means at a predetermined distance from a top surface of the rail, and

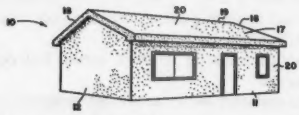
a spike for positioning longitudinally through the hollow interior of said collar and being driven through the rail and the platform.

4,342,180

ASSEMBLY METHOD OF CONSTRUCTING A BUILDING

Adler E. Gibson, Tulsa, and Paul H. Kellert, Mannford, both of Okla., assignors to Gibco International Corporation, Tulsa, Okla.

Filed Feb. 11, 1980, Ser. No. 120,506
Int. Cl.[3] E04B *1/00*
U.S. Cl. 52—741 4 Claims



1. A method of constructing a building having load-bearing and insulation properties comprising the steps of erecting a loose frame by first arranging a plurality of horizontally disposed lower steel channels in the form of a closed polygon on a base support, said channels having ends welded together forming lower corners of said frame, mounting a plurality of vertical steel supporting posts on said lower corners and having their lower ends welded to said channels, arranging a plurality of horizontally disposed upper steel beams in the form of a matching closed polygon above said channels, said beams having ends welded together forming upper corners vertically disposed above said lower corners, said posts having their upper ends welded to said beams providing support for said beams so as to dispose said upper corners each above a lower corner whereby said upper polygon has a matching parallel relation to said lower polygon with said channels facing said beams, welding a first plurality of horizontally spaced vertical steel rods to the exterior side of said beams and channels, and having upper extending ends disposing a layer of plastic insulation material between said beams and said channels, welding a second plurality of horizontally spaced vertical steel rods to the interior sides of said beams and channels so as to sandwich said insulation material between said first and second plurality of vertical rods, arranging a first and a second plurality of vertically spaced horizontal steel bars on said first and second plurality of vertical rods and securing said bars to said frame by tying said bars to said rods at their points of intersection, arranging parallel layers of wire screen overlying said first and second plurality of horizontal bars and securing said layers to said frame by tying said layers to said bars thus completing said loose frame; arranging a bracing at one post so as to dispose the same in a plumb or true vertical position, then applying a layer of concrete to both sides of said frame and allowing a sufficient time lapse for said layer of concrete to set so as to provide said building with initial rigidity after which said bracing can be removed.

4,342,181

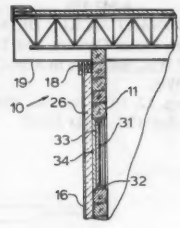
FOAMED CONSTRUCTION APPARATUS AND METHOD

Deane M. Truesdell, 2958 Helber St., Flint, Mich. 48504

Filed Jul. 18, 1980, Ser. No. 169,963
Int. Cl.[3] E04B *1/00*
U.S. Cl. 52—743 4 Claims

1. A method for modifying a pre-existing building comprising, securing additional side walls to the outer surfaces of the building at a number of points and on a number of surfaces so

that substantially the entire additional side walls are spaced horizontally from the building on the outside thereof to form spaces between the outer surfaces of said building and the inner surfaces of said additional walls and wherein said building is formed with a door or window opening and the step of adding



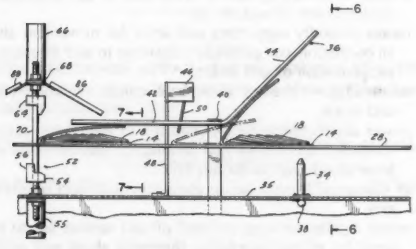
on the outside of said building reinforcing sheeting over said opening in said building to close said opening and substantially completely filling the spaces between such side walls and said building with an in situ foamed insulation to provide insulation without modifying the inside of said building.

4,342,182

CARD FOLDING AND CREASING DEVICE

Edmund G. Dennis, Belle Terre, and C. Edward Brandmaier, Centerport, both of N.Y., assignors to Cashin Systems Corp., Hauppauge, N.Y.

Filed Apr. 24, 1980, Ser. No. 143,491
Int. Cl.³ B65B *35/54, 49/16*
U.S. Cl. 53—156 **12 Claims**



1. A folding and creasing device for a card having thereon sliced food products, comprising:

a source of segregated sliced food product;

a source of supply of card with each card having a leading end and a trailing end and having a fold line intermediate these ends;

means for depositing the segregated sliced food product on the card between the fold line and the trailing end;

conveyor means for conveying the card with sliced product thereon;

folding means for folding the leading end of the card rearwardly about the fold line over the upper part of the sliced product on the card while travelling on the conveyor means; and

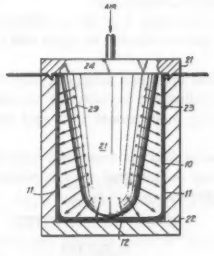
creasing means for creasing the folded card at the fold line and thereafter permitting the conveyor means to take away the creased folded card with sliced product thereon, the creasing means including a vertically reciprocal lower stop bar having a vertical surface for moving into the path of the folded card for momentarily stopping the folded card with sliced product thereon for assuring that the fold line is essentially normal to the line of travel of the folded card with sliced product on the conveyor means and having an upper horizontal surface for engaging the folded card at the fold line for creasing the folded card, means for raising said stop bar, the creasing means further including a vertically reciprocal upper bar means for lowering each upper bar into engagement with the folded card at the fold line while the folded card is momentarily stopped by the stop bar and in cooperation with said horizontal surface of said stop bar creasing the card at the fold line.

4,342,183

PROCESS FOR MAKING A CONTAINER FOR STORING FOOD

Robert L. Gordon, Monroe; George H. Naugle, Central Valley, both of N.Y., and Keith A. Cooper, Laurel, Md., assignors to International Paper Company, New York, N.Y.

Division of Ser. No. 745,834, Nov. 29, 1976, Pat. No. 4,155,697.
This application Apr. 9, 1979, Ser. No. 28,719
Int. Cl.³ B65B *31/00, 43/08, 47/08;* B29C *17/04*
U.S. Cl. 53—433 **10 Claims**



1. A process for making a container comprising:

(a) positioning in a female mold a paperboard outer container comprising a bottom, at least one vertical wall and at least one bottom edge formed by the intersection of the bottom and at least one vertical wall;

(b) providing a male mandrel arranged and constructed so that it may engage the female mold;

(c) heating a layer of plastic;

(d) positioning the layer of heated plastic between said female mold and male mandrel;

(e) drawing said plastic into said paperboard outer container positioned in said female mold whereby said plastic abuts said male mandrel and is spaced from the interior of said paperboard outer container;

(f) forming at least one horizontal flange extending about the periphery of the mouth of said outer container, said at least one horizontal flange extending from the drawn plastic at least about ⅛ inch;

(g) forming at least one vertical flange, said at least one vertical flange extending from said at least one horizontal flange at least about ⅛ inch;

(h) blow forming said plastic into substantial abutment with said at least one vertical wall and said bottom by directing gas from said male mandrel into the interior of said female mold, said gas being directed substantially into the at least one bottom edge of the paperboard outer container from a series of substantially horizontally aligned holes in the male mandrel directed substantially at the at least one bottom edge.

4,342,184

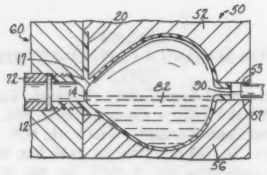
METHOD OF MANUFACTURE OF HYPODERMIC SYRINGE

William F. Van Eck, 300 Main St., East Haven, Conn. 06512, and Maurits J. H. Van Eck, 70 Jerome Cresent, PHO, Stoney Creek, Ontario, Canada

Continuation-in-part of Ser. No. 869,288, Jan. 13, 1978, abandoned, which is a division of Ser. No. 723,192, Sep. 15, 1976, Pat. No. 4,130,117, which is a division of Ser. No. 501,448, Aug. 28, 1974, Pat. No. 3,989,045, which is a continuation of Ser. No. 293,489, Sep. 29, 1972, abandoned. This application Apr. 4, 1980, Ser. No. 137,528

Int. Cl.³ B65B *43/00, 51/14*

U.S. Cl. 53—452 **21 Claims**



1. A method for manufacturing and filling an ampul adapted for use with a hypodermic needle to form a hypodermic syringe, said method comprising:

(a) injection-moulding a preform comprising a neck at one end and a parison having an open end at other end of said preform;

(b) closing said open end around a blow-fill pin;

(c) blow-moulding the parison into the form of an ampul;

(d) introducing medicament into said ampul through said pin;

(e) withdrawing said pin from said ampul; and

(f) establishing an integral wall continuum of said ampul after withdrawal of said pin.

4,342,185

PROTECTIVE GARMENT FOR THE LEGS OF A QUADRUPED OF THE HORSE GENUS AND MATERIAL FOR SUCH GARMENT

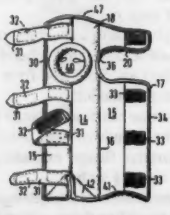
Peter I. Pellew, 9, Shafto, Mews, London S.W.1, England

Filed Nov. 26, 1980, Ser. No. 210,666

Claims priority, application United Kingdom, Nov. 27, 1979, 79 40906

Int. Cl.³ A61D *3/00;* **A61F** *5/00*

U.S. Cl. 54—82 **11 Claims**



1. A protective garment for the front legs of a quadruped of the horse genus, comprising a flat, generally rectangular, flexible pad foldable into a generally cylindrical shape to encircle a leg of the quadruped and having a top edge, side edges and a bottom, fastening means on said pad for securing it about the legs of the quadruped, said pad further including a reinforced, thicker portion for protecting the knee or hock of the quadruped, the pad being dimensioned such that its top edge extends above the knee or hock while its bottom edge extends to the hoof and the heel of the leg, a split and flared flap provided at said bottom edge, one side edge portion being cut away to form a recess extending from that side edge to about the longitudinal central line of the garment, and the reinforced knee portion being adjacent to this recess.

4,342,186

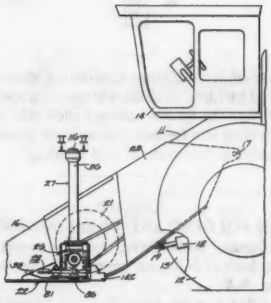
RESONANT SICKLE DRIVE

Larry F. Stikeleather, Hales Corners, and Tony L. Kaminski, Greendale, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 12, 1980, Ser. No. 186,571

Int. Cl.³ A01D *55/02*

U.S. Cl. 56—257 **15 Claims**



1. A drive mechanism for reciprocating a sickle of a harvester comprising

a lever extending generally transverse to the direction of reciprocation of said, sickle,

means pivotally supporting said lever for movement about an oscillation axis generally transverse to said direction of reciprocation of said sickle,

means adjacent one end of said lever connecting said lever to said sickle,

power means operatively connected to said sickle causing reciprocation thereof and oscillating movement of said lever about said oscillation axis,

an elongated torsion bar in alignment with said oscillation axis,

means rigidly securing one end of said torsion bar to said lever for pivotal movement therewith about said oscillation axis,

means nonrotatably supporting the other end of said torsion bar, said torsion bar storing energy when its said one end is rotated with said lever about said oscillation axis as the sickle is moved from the midpoint of its stroke to the end of its stroke and releasing its stored energy as the sickle returns from the end of its stroke to the midpoint of its stroke.

4,342,187

RESONANT SICKLE DRIVE WITH SPRING MEANS AT OPPOSITE ENDS OF THE SICKLE

Paul T. Shupert, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 29, 1980, Ser. No. 220,502

Int. Cl.³ A01D *55/02*

U.S. Cl. 56—257 **13 Claims**

1. A drive mechanism for reciprocating an elongated sickle of a harvester comprising

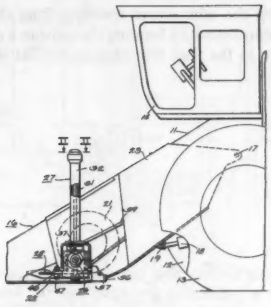
a pair of substantially parallel levers extending generally transverse to the direction of reciprocation of said sickle and having first corresponding ends pivotally connected, respectively, to opposite ends of said sickle,

means pivotally supporting said levers intermediate their

opposite ends for movement about parallel oscillation axes generally transverse to said direction of reciprocation of said sickle,

power means operatively connected to said sickle causing reciprocation thereof and oscillating movement of said levers about said oscillation axes,

a pair of elongated upright torsion bars in alignment with said oscillation axes, respectively



means rigidly securing first corresponding ends of said torsion bars to said levers for pivotal movement therewith about said oscillation axes, and

means nonrotatably supporting second corresponding ends of said torsion bars, said torsion bars storing energy as the sickle is moved from the midpoint of its stroke to the end of its stroke and releasing stored energy as the sickle returns from the end of its stroke to the midpoint of its stroke.

4,342,188

PIRN EXCHANGE APPARATUS IN DOUBLE TWISTER

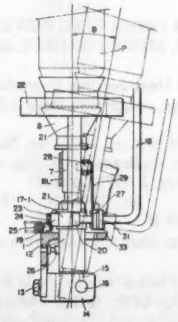
Akira Okamoto, Joyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Joyo, Japan

Filed May 8, 1980, Ser. No. 147,924

Claims priority, application Japan, May 11, 1979, 54-58445

Int. Cl.³ D01H *7/22, 7/86*

U.S. Cl. 57—89 **5 Claims**



1. In a double twisting apparatus comprising

a spindle having a wharve and upon which a pirn is placed;

a support means;

a driving belt positioned to have its longitudinal flat surface contactable with the periphery of the wharve to cause rotation of said wharve;

a bolster for holding said wharve, said bolster being pivotally supported by said support means to have said wharve movable in directions toward and away from said driving belt;

brake means for braking rotation of said wharve; and

pirn exchange means for enabling exchange of said pirn;

the improvement wherein said pirn exchange means comprises operation lever means movable in a direction parallel to said driving belt, and in a direction perpendicular to said driving belt;

means for mounting said lever means on said bolster for moving said bolster in a direction perpendicular to said driving belt;

spring means connected to said lever means and held by said support means;

said brake means being connected to said lever means and adjacent to said wharve, whereby movement of said lever means in a direction parallel to said belt moves said brake means to brake rotation of said wharve; and

positioning means connected to said lever means for holding said brake means in a braked condition until released, and for holding said lever means and said wharve in a tilted replacement position until released, whereby after said brake means brakes said wharve and is held in a braked condition, said lever means against resilient force of said spring means is movable in a direction perpendicular to the belt to thereby cause said wharve to move away from said belt into a tilted replacement position whereby said positioning means holds said wharve in said tilted replacement position.

4,342,189

APPARATUS FOR PRODUCING A BUNDLE OF FIBROUS ELEMENTS

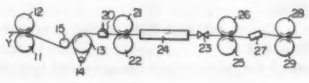
Takao Negishi, and Kazuo Tomiita, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 940,437, Sep. 7, 1978, Pat. No. 4,258,542. This application Oct. 20, 1980, Ser. No. 198,603

Claims priority, application Japan, Mar. 13, 1978, 53-27634; Apr. 17, 1978, 53-40279; Jun. 16, 1978, 53-72224; Jul. 18, 1978, 53-87472; Jul. 18, 1978, 53-87473

Int. Cl.³ D02G *3/34*

U.S. Cl. 57—288 **8 Claims**



1. A fiber processing apparatus comprising a drawing device, said drawing device provided with a frictional resistance-imparting member having a pin-like shape and a drawing roller, the central axis of said frictional resistance-imparting member having a pin-like shape being substantially in parallel to the central axis of said drawing roller, and the following relationship is established between said frictional resistance-imparting member and said drawing roller:

$$d_3^2 + d_3(d_1 + d_2) \leqq 50^2$$

where d_1 stands for the diameter (mm) of said frictional resistance-imparting member having a pin-like shape, d_2 stands for the diameter (mm) of the drawing roller, and d_3 stands for a distance (mm) between said drawing roller and said frictional resistance-imparting member.

4,342,190

STRANDING STOCK OF LARGE CROSS SECTIONS

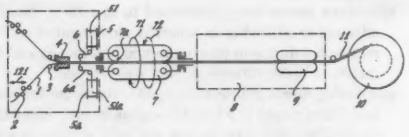
Gerhard Ziemek, Langenhagen; Wolfram Klebl, Isernhagen; Ernst Hoffmann, Langenhagen, and Reiner Brünn, Essel, all of Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,261

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946248

Int. Cl.[3] H01B *13/04;* D07B *3/00, 7/14*

U.S. Cl. 57—293 7 Claims



1. In an apparatus for stranding elongated stock paid individually from spools, there being means for pulling the stock and moving the stock in axial direction and including a stationary head, said means for pulling pulling the stock through the head and combining the stock into a bundle; a capstan including means being independently driven, for engaging individually the bundle as moved by the means for pulling, the means upon engaging the bundle holding the bundle while traveling in positive engagement therewith for a particular travel path, said engaging means disengaging from the bundle as the bundle continues beyond said travel path; means for rotating the capstan about an axis along the travel path so that a portion of the bundle, as held by the engaging means, in any instant in positive engagement therewith, is rotated as a whole without being stranded; said capstan being disposed for said engagement with the bundle at a point displaced from said head so that the bundle is stranded as between the head and the capstan, the improvement comprising:

means disposed between said head and the capstan, for winding at least one ribbon about the bundle.

4,342,191

METHOD FOR THE PRODUCTION OF ORNAMENTAL LINK CHAINS (VENETIAN CHAINS) READY FOR SOLDERING

Karl-Heinz Lange, Pforzheim, Fed. Rep. of Germany, assignor to Fico Fischer & Co., Pforzheim, Fed. Rep. of Germany

Filed Sep. 13, 1979, Ser. No. 75,023

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839746

Int. Cl.[3] B21L *11/00*

U.S. Cl. 59—35 R 1 Claim

1. A method for production of ornamental link chains ready for soldering preparation comprising:

drawing in a flat wire;

cutting the flat wire to length;

preliminarily bending a section of flat wire into a flat U with two short arms;

conveying the flat U;

finishing the flat U by bending it to an individual closed link such that said two short arms form a second transverse web having a butt-joint at their two free ends midsecting the second transverse web and forming the individual closed link where the individual links are bent at right angles out of flat wire and where each link is provided with two axial arms and a first transverse web and the second transverse web;

rotating the such closed individual link by an angle of 90° around an axis normal to the surface of the first and second transverse web;

adjusting the individual link in height while maintaining the first transverse web in an assembly plane determined by a vertical axis;

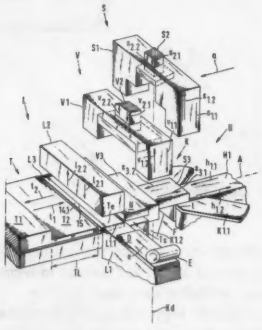
detachably fixing and positioning the first transverse web for the mounting of the following individual link;

conveying the following individual link corresponding to a discharge cycle distance along a vertical axis in an extraction section;

striking the chain for the preset adjustment of a minimum width of a gap forming said butt-joint;

the improvement comprising:

conveying the wire pieces resulting from the cutting step before preliminarily bending the same in a direction transversely to the feed direction of the flat wire blank and



transversely to the action of the cutting to length and the preliminary bending and the finishing operation;

conveying the flat U in a subsequent conveying step prior to the formation of a closed link in a direction transversely to the feed direction of the flat wire blank and transversely to the direction of action of the cutting to length and the preliminary bending and the finishing operation;

holding down the flat wire at least for the step of preliminarily bending to a flat U and during the step of closing the U;

pushing the particular individual link into the extraction section to adjust the first transverse web; and

superimposing the step of striking to the conveying in the extraction section.

4,342,192

PLANT FOR PRODUCING POWER FROM SOLID FOSSIL FUELS, MORE PARTICULARLY BITUMINOUS COAL

Klaus Heyn, and Hans-Joachim Pogrzeba, both of Essen, Fed. Rep. of Germany, assignors to Steag A.G., Essen, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,564

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2850005; Aug. 2, 1979, 2931427

Int. Cl.[3] F02C *6/18*

U.S. Cl. 60—39.18 B 16 Claims

1. A plant for producing power from solid fossil fuels comprising:

a pressure fired boiler receiving said fuel and burning same, the combustion of the fuel producing steam in said boiler and flue gases discharged therefrom into a flue gas path;

a steam turbine coupled to said boiler for generating power from the steam;

flue gas cleaning means in said flue gas path downstream of said boiler for at least partially cleaning the flue gases;

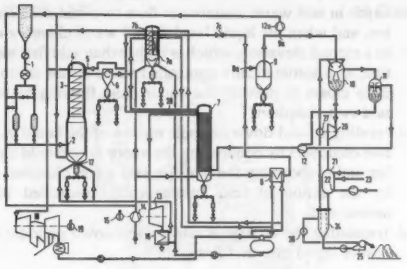
flue gas cooling means in said flue gas path downstream of said boiler for cooling said flue gases;

a flue gas recycling system connected to said flue gas path downstream of said cooling means for returning a portion of the flue gases to the boiler for reducing the boiler firing

temperature to below the ash melting temperature to obtain drying firing in said boiler; and

gas turbine means coupled to said flue gas path for receiving said flue gases for generating power from the gases;

said flue gas cooling means including a gas path parallel to said flue gas path and connected thereto downstream of said pressure-fired boiler and upstream of said recycling system, said parallel gas path containing a waste heat boiler, said parallel gas path removing a portion of the flue gases from said flue gas path and returning same to said flue gas path after passage through said waste heat boiler, said waste heat boiler being coupled to said steam turbine for providing steam thereto.



4,342,193

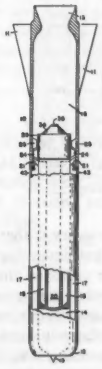
CONVERTIBLE ROCKET-AIR BREATHING ENGINE

Albert G. Thatcher, 39 Briarcliff Rd., Mountain Lakes, N.J. 07046

Continuation-in-part of Ser. No. 361,149, Apr. 20, 1964, abandoned. This application Aug. 9, 1966, Ser. No. 571,325

Int. Cl.[2] F02K *5/00*

U.S. Cl. 60—246 **8 Claims**



1. A convertible rocket-air breathing engine comprising, a tubular casing for housing all the engine components, said casing having an entrance opening at one end for admitting air and an exit opening at the other end for discharging burned gasses, a hollow rotor positioned in axial alignment with the casing and mounted for rotation, said rotor formed with walls which define a first combustion chamber where a fuel and an oxidizer are mixed and burned, said rotor also formed with a plurality of exit propulsion nozzles at the downstream end of the rotor for ejecting partially burned gasses, a second combustion chamber downstream from the rotor for mixing air with the partially burned gasses during a first mode of operation, a plurality of vanes secured to said rotor for pumping air into the second combustion chamber, a plurality of fuel nozzles positioned within the first combustion chamber for ejecting fluid fuel therein, a plurality of oxidizer nozzles also positioned within the first combustion chamber for ejecting fluid oxidizer therein, a second oxidizer nozzle in alignment with the rotor axis for supplying oxidizer fluid to the second combustion chamber during a second mode of operation, and valve flaps in the tubular casing for permitting air to pass from the atmosphere to the second combustion chamber during the first mode of operation and for blocking the air flow during the second mode of operation.

4,342,194

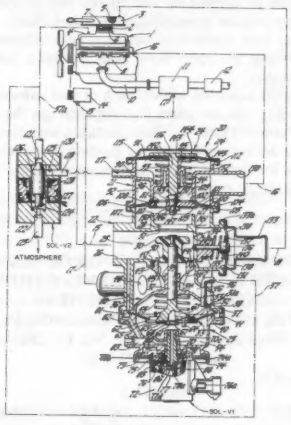
ELECTRIC AIR CONTROL SWITCHING VALVE

Gordon R. Paddock, and John E. Jones, both of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1980, Ser. No. 192,725

Int. Cl.[3] F01N *3/22*

U.S. Cl. 60—290 **4 Claims**



1. A fail safe programmable air pump discharge control valve for an engine comprising:

a switching valve having an inlet connectable with the air pump discharge and having a primary outlet passage, a converter outlet passage connectable to a catalytic converter, and a plug element movable to selectively obstruct and open the primary outlet passage and the converter outlet passage in accord with actuation of motor elements connected to the plug element;

means defining a housing having a passage in communication with the primary outlet, an exhaust passage connectable to the engine exhaust ports to deliver air to said exhaust ports and an air discharge passage to the atmosphere, said housing having a pair of coaxial, facing annular first and second valve seats with said first valve seats encircling said passage;

a flat valve located between said valve seats for selective engagement with one or the other, said valve having an aperture means therethrough;

actuator means selectively operable to seat said valve on said first valve seat or on said second valve seat;

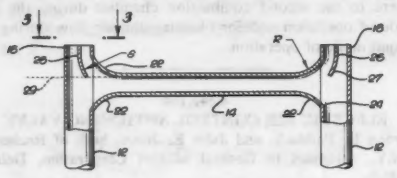
whereby said flat valve in seating engagement with said first valve seat delivers air to the exhaust valve ports and when in seating in engagement with said second valve seat delivers air only to said air discharge passage; and said actuator means including spring means to normally bias said flat valve into seating engagement with said second valve seat.

4,342,195

MOTORCYCLE EXHAUST SYSTEM

Ching P. Lo, 4900 Overland Ave., #115, Culver City, Calif. 90230

Filed Aug. 15, 1980, Ser. No. 178,398
Int. Cl.³ F01N 7/10
U.S. Cl. 60—313 **15 Claims**



1. For use in a motorcycle having at least two engine cylinders, a motorcycle exhaust system, comprising:

at least a pair of exhaust conduits each having an inlet end connected to a different one of the engine cylinders for receiving exhaust gases discharged therefrom;

a crossover pipe connected between said exhaust conduits and defining an open flow path between said exhaust conduits; and

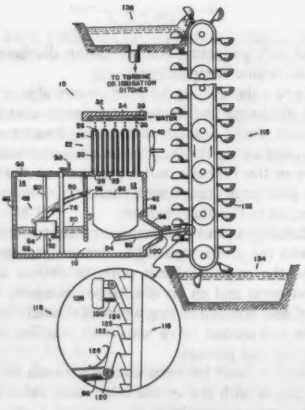
divider means mounted within each of said exhaust conduits for dividing exhaust gases flowing through the associated exhaust conduit into two flow portions, said divider means having a deflection surface for guiding one of the gas flow portions for flow through said crossover pipe to another of said exhaust conduits.

4,342,196

METHOD AND APPARATUS FOR GENERATING POWER AND IRRIGATING PLANTS WITH SOLAR ENERGY AND EARTH HEAT

Hsu-Chieh Yeh, 1174 Bucknell Dr., Monroeville, Pa. 15146

Filed Jul. 22, 1980, Ser. No. 171,256
Int. Cl.³ F03G 7/00
U.S. Cl. 60—531 **34 Claims**



1. A method of utilizing various forms of solar energy and earth heat for power generation and irrigation comprising the steps of:

a. providing interconnecting air-evacuated warm chamber and cold chamber, said two chambers being partially filled with volatile liquid, which has a large change in saturation vapor pressure per one degree of temperature change at the operation temperature, the interconnection between said two chambers being located below the levels of said volatile liquid, so that when the liquid level in one of said two chambers rises, the liquid level in the other chamber drops;

b. providing an automatically controlled valve means, which acts in such a way that when the liquid level in said warm chamber drops to a first elevation, said automatically controlled valve means automatically opens to cause the vapor in said warm chamber to flow into said cold chamber, and when the liquid level in said warm chamber rises to a second elevation, which is higher than said first elevation, said automatically controlled valve means automatically closes to prevent the vapor from flowing between said two chambers;

c. creating up-and-down periodic motion of the liquid in said two chambers by condensing the vapor in said cold chamber and evaporating the liquid in said warm chamber, and by the action of said automatically controlled valve means; and

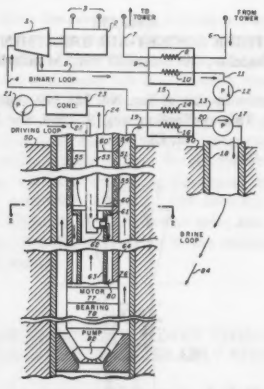
d. translating the energy of said up-and-down periodic motion of liquid into useful work.

4,342,197

GEOTHERMAL PUMP DOWN-HOLE ENERGY REGENERATION SYSTEM

Hugh B. Matthews, Boylston, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,745
Int. Cl.³ F03G 7/00
U.S. Cl. 60—641.4 **3 Claims**



1. Apparatus for the recovery of thermal energy at a surface station from a source of hot liquid disposed at a subterranean station within the interior region of the earth comprising:

thermally conductive conduit means extending from said surface station to said subterranean station for conveying a working liquid in a relatively cool state and including a plurality of radially extending fins,

superheated fluid generator means for converting said working liquid into an energetic fluid for driving turbine motive means at said subterranean station, and

pump means at said subterranean station operatively coupled to and responsive to said motive means for pumping said hot liquid from said interior region in heat exchanging relation with said vapor generator means, and

thermally insulative conduit means disposed concentrically about said thermally conductive conduit means for guiding the exhaust of said motive means toward said surface station,

said thermally conductive and said thermally insulative means being so disposed and characterized as to minimize heat flow from said hot liquid into said exhaust and to maximize heat flow from said exhaust into said working liquid.

4,342,198

GAS TURBINE ENGINE FUEL INJECTORS

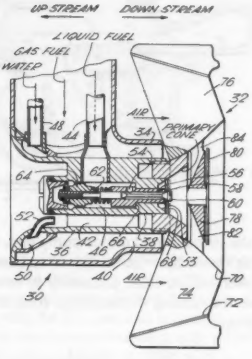
Jeffrey D. Willis, Coventry, England, assignor to Rolls-Royce Limited, London, England

Filed Jul. 16, 1980, Ser. No. 169,431

Claims priority, application United Kingdom, Aug. 1, 1979, 7926835

Int. Cl.³ F23R *3/36, 3/38*

U.S. Cl. 60—737 **10 Claims**



1. A gas turbine engine dual fuel injector comprising a structure defining separate gaseous and liquid fuel flow paths, the gaseous fuel flow path including a first annular gas duct in communication with a second annular gas duct, the second annular gas duct decreasing in cross-sectional area in the direction of flow therethrough and including air swirling means, the liquid fuel flow path including primary liquid fuel nozzles and a main liquid fuel nozzle and an annular liquid fuel duct downstream of said liquid fuel nozzles which decreases in cross-sectional area in the direction of flow therethrough, the primary and main liquid fuel nozzles being arranged to inject liquid fuel into air from an air flow passage located upstream of the annular liquid fuel duct, the annular liquid fuel duct being located inwardly of the second annular gas duct, both the annular liquid fuel duct and the second annular gas duct being arranged in use to receive a flow of compressed air.

4,342,199

SCREW COMPRESSOR SLIDE VALVE ENGINE RPM TRACKING SYSTEM

David N. Shaw, Unionville, and Joseph A. L. N. Gagnon, Windsor Locks, both of Conn., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed Oct. 3, 1980, Ser. No. 193,696

Int. Cl.³ B60H *3/04;* **F25B** *41/00*

U.S. Cl. 62—133 **10 Claims**

1. A helical screw compressor slide valve engine RPM tracking system for an engine driven compressed gas refrigeration system, said refrigeration system including:

an engine driven helical screw rotary compressor having a low side, suction pressure inlet, and a high side, discharge pressure outlet, and a longitudinally shiftable slide valve for loading and unloading the compressor,

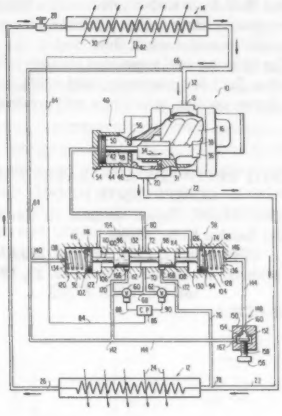
a fluid pressure operated slide valve actuator operatively coupled to said slide valve for shifting said slide valve between full load and full unload positions,

first control valve means for selectively connecting said slide valve actuator to the compressor high side discharge pressure outlet to effect compressor loading, and

second control valve means for selectively connecting said slide valve actuator to the compressor low side suction pressure inlet to effect unloading of the compressor,

the improvement wherein said tracking system comprises:

tracking means responsive to engine acceleration and deceleration for immediately connecting said slide valve actuator to the low side compressor suction pressure inlet during engine acceleration to immediately unload the compressor and for connecting the slide valve actuator to the refrigeration high side discharge pressure outlet during engine deceleration to immediately load the compressor, thereby preventing refrigeration system temperature fluctuation due to engine acceleration or deceleration, and



wherein said tracking means includes means for sensing a change in compressor suction pressure responsive to engine acceleration or engine deceleration, and means for operating said second control valve means and said first control valve means, respectively, to effect immediate unloading of the compressor or loading of the compressor as required to meet engine acceleration or deceleration conditions.

4,342,200

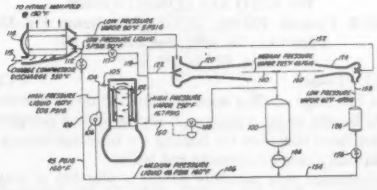
COMBINED ENGINE COOLING SYSTEM AND WASTE-HEAT DRIVEN HEAT PUMP

Alvin Lowi, Jr., San Pedro, Calif., assignor to Daeco Fuels and Engineering Company, Wilmington, Calif.

Continuation-in-part of Ser. No. 631,023, Nov. 12, 1975, Pat. No. 4,164,850. This application May 29, 1979, Ser. No. 43,313

Int. Cl.³ F25B *1/06*

U.S. Cl. 62—191 **17 Claims**



13. An automotive engine cooling system for utilizing otherwise wasted heat from an engine to produce a cooling effect, comprising:

a closed fluid circuit means;

a turbocharged automotive engine including a cooling jacket thereon; an evaporative engine cooling fluid in said circuit means; condenser means for condensing said coolant fluid vaporized in

said engine cooling jacket;

engine charge cooling means;

means for conveying a minor portion of said condensed coolant from said condenser means to said charge cooling means to effect evaporation of said condensed coolant portion in said charged cooling means at a lower pressure to create a cooling effect for the engine charge in heat exchange relationship with said evaporated coolant in said engine charge cooling means;

means for conveying a major portion of said condensed coolant fluid from said condenser at a higher pressure to said engine cooling jacket whereby to cool said engine and vaporize said coolant fluid; and

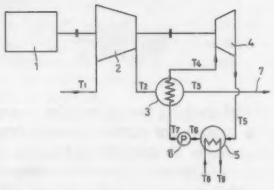
means for utilizing said vaporized cooling jacket effluent as a motive fluid for conveying said coolant evaporated in said charge cooling means into said condenser.

4,342,201

ENERGY RECOVERY APPARATUS FOR A GAS COMPRESSOR PLANT

Hiroshi Ishii, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 12, 1980, Ser. No. 233,821
Claims priority, application Japan, Feb. 19, 1980, 55/19968
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.4 **9 Claims**



1. In a gas compression plant including a gas compressor driven by a main drive, the compressor including a gas intake and a compressed gas outlet, the improvement comprising a refrigerant circuit connected to said gas outlet, said refrigerant system including a heat exchanger connected to receive said compressed gas, a turbine, a condenser, and a pump for circulating said refrigerant through said circuit, said refrigerant being heated and vaporized in said heat exchanger by a quantity of heat received from said compressed gas, and said vaporized refrigerant expanding in and driving said turbine and being liquefied in said condenser.

4,342,202

BEVERAGE COOLING APPARATUS FOR CONNECTION TO AUTO AIR CONDITIONER

Russell R. Knutson, 200 NE. 28 Ter., Boca Raton, Fla. 33432

Filed Mar. 25, 1981, Ser. No. 247,236
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—243 **9 Claims**

1. A beverage cooling apparatus for use on an automotive vehicle having an air conditioner, said apparatus comprising:

an insulated container for holding the beverage having substantially parallel opposite end walls;

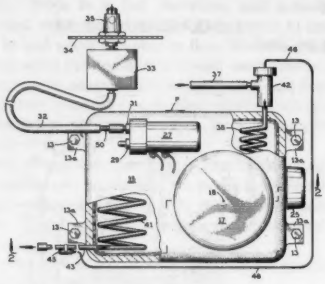
a continuous pipe assembly having a plurality of rows of several interconnected pipe coils, each row of pipe coils extending helically about an axis which extends substantially parallel to said end walls, and said rows of pipe coils being positioned in succession along the inside of the container from one end row located adjacent one of said end walls of the container to an opposite end row located adjacent the opposite end wall;

means for introducing refrigerant from the air conditioner into said one end row of pipe coils in the container to flow through the successive rows of pipe coils for cooling the beverage in the container;

means for passing the refrigerant from the opposite end row of pipe coils in the container back to the air conditioner;

a motor-pump unit mounted on top of the container;

and a beverage intake pipe connected at its upper end to the



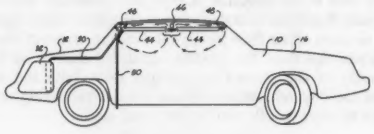
inlet of the pump in said motor-pump unit, said intake pipe extending down into the container and terminating in an open lower end in close proximity to the bottom of the container for passing the beverage from the container up to the pump.

4,342,203

COOLING FABRIC

Paul W. Moore, 152 Breckinridge Apartments, Pelham Rd., Greenville, S.C. 29615

Filed Nov. 28, 1980, Ser. No. 211,088
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—244 **8 Claims**



1. An apparatus for cooling objects such as vehicles comprising:

a composite layered member coextensive with said object to be cooled including,

(i) a protective and permeable upper layer of material;

(ii) a porous layer of material through which water migrates,

(iii) a nonporous heat absorbing under layer;

(iv) water conveying channels interposed between said porous and said under layer;

(v) openings provided in said channels providing communication between the interior of said channels and said porous layer of material;

(vi) opening provided in said protective and permeable upper layer of material for allowing water vapor to pass therethrough, and

(vii) valve means for controlling the flow of water through said channels;

a souce of water;

conduit means extending between said source of water and said layered member, and

means for forcing said water from said source of water through said channels into said porous material so that upon evaporation through said permeable layer by heat transferred from said object, said object is cooled.

4,342,204

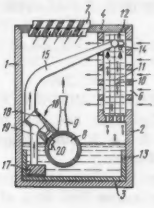
ROOM EJECTION UNIT OF CENTRAL AIR-CONDITIONING

Zograb A. Melikian; Larisa G. Oganian, both of prospekt Oktemberiana, 29a, kv. 52; Arsen S. Simonian, ulitsa 4 Avan, 3 pereulok, dom 7, and Robert T. Kirakosian, Nor-Aresh, 2 ulitsa, 86, all of Erevan, U.S.S.R.

Filed Nov. 29, 1979, Ser. No. 98,619

Int. Cl.[3] F28D *5/00*

U.S. Cl. 62—304 3 Claims



1. A room ejection unit of a central air-conditioning system comprising, a housing defining a mixing chamber and having an inlet port communicating with said mixing chamber for communicating with the exterior and an outlet port above the mixing chamber in communication therewith; a heat exchanger installed in said housing adjacent the inlet port and constructed as a direct-contact apparatus with a sprayed packing; an air humidifier in the housing adjacent the inlet port having sprayers for spraying water on said packing, a drip pan below the sprayed packing for receiving water from the sprayers dripping from the sprayed packing, a pump drawing water from the drip pan and providing it to said sprayers, a primary air supply manifold having nozzles arranged in a lower part of the mixing chamber for delivery of primary air into an upper part of the mixing chamber for mixing with a flow of air from said heat exchanger and humidifier in a direction toward the outlet port, and said pump comprising an air-water ejector communicating with said primary air supply manifold and said pan.

4,342,205

VERTICAL PLATE FREEZER

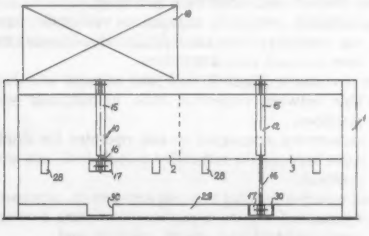
Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed May 6, 1981, Ser. No. 260,985

Claims priority, application Denmark, May 19, 1980, 2177/80

Int. Cl.[3] F25C *5/14*

U.S. Cl. 62—341 1 Claim



1. A contact freezer apparatus including vertically disposed freezer plates and means for supplying freezing medium thereto for freezing and for supplying defrosting medium thereto after freezing, the apparatus comprising frame means for slideably supporting a row of the plates in spaced apart relationship, means for moving the plates transversely within said frame means for adjusting the spacings between the plates, lifting devices supported by said frame means at opposite ends of said row of plates, beam means extending beneath said row of plates being interconnected with said lifting devices, bottom plates located in the spaces between adjacent freezer plates and lying above said beam means, linkage devices interconnecting said bottom plates with said beam means, each said linkage device comprising an extendable telescoping bar including a tube and a rod, a free end of said tube being connected to a corresponding one of said bottom plates and a free end of said rod being connected to said beam means, a tranversely extending lever hingedly connected at one end to said tube, and a linkage element hingedly interconnected at opposite ends respectively to said lever between opposite ends thereof and to said beam means, a fixed abutment means on said frame means disposed above said lever of each of said linkage devices outwardly of said linkage element, whereby upon operation of said lifting devices, said beam means is elevated and said lever of each of said linkage devices is caused to pivot upon engagement with said abutment means to thereby extend said tube of each said linkage device into each said space between said adjacent freezer plates for raising each said bottom plate upwardly between said freezer plates.

4,342,206

DEVICE FOR APPLYING DYE PATTERNS ONTO CONTINUOUSLY MOVING WEBS OF MATERIAL

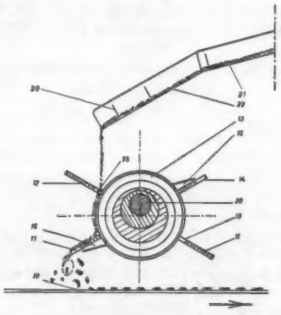
Heinz Rommel, Seevetal, Fed. Rep. of Germany, assignor to Firma Babcock Textilmaschinen KG (GmbH & Co.), Seevetal, Fed. Rep. of Germany

Filed Apr. 28, 1980, Ser. No. 144,494

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917146

Int. Cl.[3] D06B *1/04, 11/00*

U.S. Cl. 68—205 R 12 Claims



1. A device for applying dyes in the form of geometric patterns or random drops onto continuously moving webs of material, comprising:

a support element;

at least one separator bar mounted on said support element;

means for supplying individual dye streams to said separator bar; and

drive means coupled to said support element for generating oscillations in said support element and, in turn, said separator bar perpendicular to as well as in the moving direction and counter direction of the travel direction of the web of material.

4,342,207

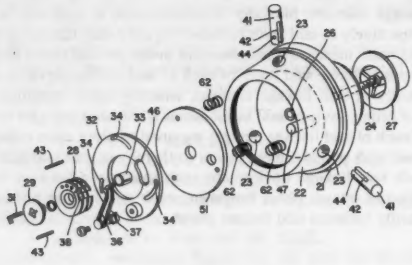
SAFE RELOCK MECHANISM

Daniel L. Holmes, 913 Hoffman Blvd., Richmond, Calif. 94804, and Tim Uyeda, Torrance, Calif., assignors to Daniel L. Holmes, Richmond, Calif.

Filed Mar. 17, 1980, Ser. No. 131,155

Int. Cl.³ E05B *63/14*

U.S. Cl. 70—119 **16 Claims**



1. In a safe locking mechanism which includes a plurality of retractable locking bolts extending from a safe door, said locking bolts being generally disposed in a common plane, a relock mechansim comprising a first plate disposed in the safe door and extending to said locking bolts, means on said locking bolts for releasably engaging peripheral edge portions of said first plate with said locking bolts in the extended position to block retraction of said locking bolts, means for urging said first plate toward said common plane to engage said means on said locking bolts, and means for disengaging said first plate from said locking bolts to permit retraction of said locking bolts by said locking mechanism.

4,342,208

LOCKING GAS CAP WITH TORQUE OVERRIDE FEATURE

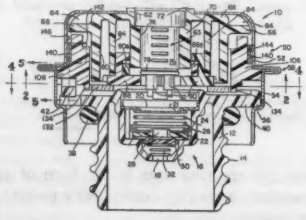
John H. Evans, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Division of Ser. No. 735,252, Oct. 29, 1976, Pat. No. 4,107,961, which is a continuation-in-part of Ser. No. 611,219, Sep. 8, 1975, Pat. No. 4,000,633. This application Feb. 8, 1978, Ser. No. 876,030

The portion of the term of this patent subsequent to Jan. 4, 1994, has been disclaimed.

Int. Cl.³ B65D *51/16, 55/14*

U.S. Cl. 70—165 **5 Claims**



1. A locking gas cap for a threaded filler neck having an axis and sealing lip extending peripherally about said axis, said cap comprising a closure member threaded to engage and close said filler neck, gasket means on said closure member for engaging and sealing against said lip, an outer shell providing a hand grip secured to said closure member for rotation thereon about said axis, a key-operated lock and at least one locking member moved by said lock, said lock and locking member being connected to said shell for rotation therewith, in which the improvement comprises a race disposed for rotation between, and with respect to said shell and closure member, said locking member being movable into and out of engagement with said race, said shell and closure member providing adjacent axially facing surfaces between which said race is axially stationarily positioned, and means for drivingly connecting said race and said closure member for rotation together about said axis, said connecting means being torque-limited in the direction which advances said closure member on said filler neck to protect said gasket means against overtightening and positive in the opposite direction to permit removal of said cap from said filler neck.

4,342,209

CENTRAL VEHICLE DOOR-LOCK SYSTEM

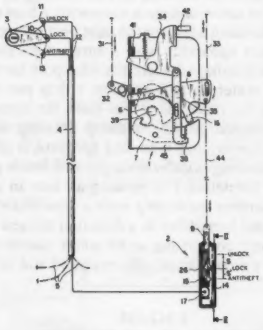
Frank Kleefeldt, Heiligenhaus, Fed. Rep. of Germany, assignor to Kiekert GmbH & Co. Kommanditgesellschaft, Heiligenhaus, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,977

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1979, 2911630

Int. Cl.³ E05B *53/00*

U.S. Cl. 70—264 **10 Claims**



1. A central vehicle door-lock system comprising:

at least two door latches each including a detent movable between a lock position securing the respective door to the respective doorpost and an unlock position permitting separation of the respective door from the respective doorpost, and mechanism for displacing said detent between said lock and unlock positions;

respective servoactuators each including

an actuator operatively engaged via said mechanism with the respective detent and displaceable between respective lock and unlock positions,

an operator engageable with said actuator and displaceable between respective lock, unlock, and antitheft positions,

a servomotor connected to said operator for displacing same between the respective unlock, lock, and antitheft positions,

link means connected between said detents, actuators, and operators for joint displacement of same between the respective lock and unlock positions, and

a lock pawl displaceable by the respective operator only in the lock position of the respective actuator and in the antitheft position of the respective operator from a freeing position permitting displacement of the respective actuator from the respective lock to the respective unlock position into a blocking position preventing displacement of the respective actuator from the respective lock to the respective unlock position; and

control means connected to said servomotors and including a switch displaceable between a respective unlock posi-

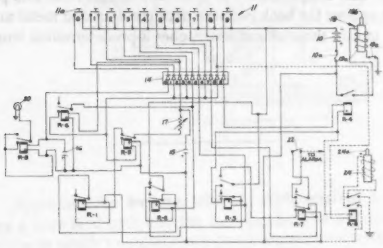
tion for displacing said operators into the respective unlock positions, a respective lock position for displacing said operators into the respective lock positions, and a respective antitheft position for displacing said operators into the respective antitheft positions, whereby when said switch is in said antitheft position said mechanisms cannot displace said detents into the respective unlock positions.

4,342,210

VEHICLE ENTRY LOCKING ARRANGEMENT

Clarence E. Denningham, 1220 S. Weinbach Ave., Vanderburgh County, Evansville, Ind. 47714

Filed Dec. 13, 1979, Ser. No. 103,337
Int. Cl.[3] E05B *49/00*; H01H *9/26, 47/00*
U.S. Cl. 70—278 **9 Claims**



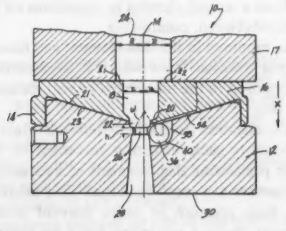
1. A vehicle entry locking arrangement comprising circuitry including a plurality of manually operated pushbutton switches, electromechanical relays arranged is a sequentially responsive relationship to a preselected combination of said pushbutton switches controlling unlocking of an entry to said vehicle, an electromechanical enabling relay energized in response to one of said pushbutton switches of said preselected combination and de-energized in response to a subsequently activated pushbutton switch of said preselected combination, where said electromechanical enabling relay serves to activate an independent alarm system, and where said pushbutton switches are each defined by switching elements arranged within a housing in a weatherproof relationship.

4,342,211

PROCESS AND APPARATUS FOR EXTRUDING A COMPOSITE SECTION

Alfred Wagner, Steisslingen, and Adolf Ames, Hilzingen-Duchtlingen, both of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation-in-part of Ser. No. 92,934, Nov. 9, 1979, Pat. No. 4,290,290, which is a continuation of Ser. No. 887,317, Mar. 16, 1978, abandoned. This application Jun. 24, 1981, Ser. No. 276,953
Int. Cl.[3] B21C *23/22, 25/02, 27/00*
U.S. Cl. 72—253.1 **22 Claims**



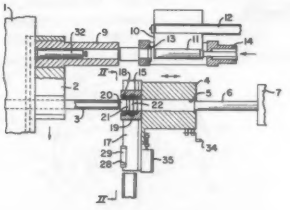
1. An extrusion die having a shape-giving opening, a feed chamber upstream of the shape-giving opening and communicating therewith, a feed channel at the side of the shape-giving opening and communicating therewith, and a container passage upstream of said feed chamber and communicating therewith, said die being for the extrusion of composite sections comprising a beam-like section, in particular a beam-like section made of a light-weight metal which can be fed to the shape-giving opening in the die through said container passage and said feed chamber, and a facing of at least a part of at least one face of the beamlike section in the form of a strip of another metal which can be fed to the shape-giving opening in the die through said feed channel, said feed chamber comprises a first section immediately downstream of said container passage and a second section downstream of said first section and immediately upstream of said shape-giving opening wherein the ratio of the maximum radius r max. of said first section of said feed chamber to the minimum radius R min. of said container passage is less than or equal to 0.8 and wherein said second section has a maximum radius r' max. less than the maximum radius r max. of said first section.

4,342,212

INDIRECT EXTRUSION PRESS

Guenter W. Sibler, Pittsburgh, Pa., assignor to Sutton Engineering Company, Pittsburgh, Pa.

Filed Sep. 2, 1980, Ser. No. 183,230
Int. Cl.[3] B21C *23/00, 33/00, 35/04*
U.S. Cl. 72—255 **1 Claim**



1. Extruding apparatus comprising a platen, a platen slide movable back and forth across the rear face of the platen, a die stem behind the platen secured at its front end to slide and extending rearwardly therefrom, a billet-receiving sleeve spaced laterally from said stem and secured at its front end to the slide and extending rearwardly therefrom, a billet container behind said slide provided with a billet-receiving passage therethrough and movable toward and away from the platen, said platen slide being movable from a first position in which said die stem is aligned with said container passage to a second position in which said sleeve is aligned with said container passage, means behind said sleeve in said first slide position for pushing a hot billet into the sleeve, a horizontal track secured to the front of said container transversely thereof, a die slide slidably mounted on said track and movable back and forth along the track from an inner position between the container passage and die stem when the platen slide is in said first position to an outer position at one side of the container in which the die slide is aligned with the die stem in said second position of the platen slide, said die slide having a passage extending therethrough from front to back, a vertically movable die cassette disposed in the front end of said die slide passage, a die mounted in said cassette, an extrusion stem behind the container and movable forward into said container passage to extrude a billet through said die, a vertically movable cassette for receiving a dummy block and extrusion butt disposed in said die slide passage behind the die cassette, a shear pusher frame rigidly connected with said container and projecting therefrom toward said platen, a shear member mounted in said frame and movable downwardly therein between said container passage and die stem when the platen slide is in said first position, said track being provided in front

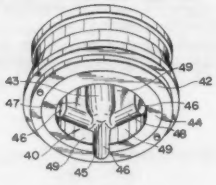
of said passage with an opening therethrough that is beneath said dummy block and butt cassette when the die slide is in its inner position, the bottom of the die slide having an opening therethrough directly above said track opening, said track and slide openings being large enough to receive the dummy block and butt receiving cassette when pushed down by said shear member to shear an extrusion, means below said last-mentioned cassette for raising it to its upper position in the die slide after said shearing, said track also being provided with an opening therethrough that is beneath said die cassette when the die slide is in its outer position aligned with said die stem, means below the die cassette for raising it above the other cassette when the die slide is in said outer position to permit the die slide to pass over the die stem to cause the die stem to eject a dummy block and extrusion butt from their cassette in the die slide when the container is moved toward the platen, means in said sleeve for pushing said hot billet from said sleeve in said second position of the platen slide into said container passage during said movement of the container toward the platen.

4,342,213

CLOSED CHAMBER EXTRUSION METHOD AND APPARATUS FOR SHAPING OF METAL ROD INTO TULIP-SHAPED PART

Hajime Koshimaru, Machida, and Shoju Ishii, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 5, 1981, Ser. No. 222,393
Claims priority, application Japan, Jan. 17, 1980, 55-3784
Int. Cl.[3] B21D *22/00*
U.S. Cl. 72—358 **9 Claims**



1. A method of manufacturing a tulip-shaped metal part having three outwardly extending petal-like arms which are spaced apart at equal angular intervals and which extend from one end of a solid cylinder obliquely outwardly with respect to the longitudinal axis of the solid cylinder in their root portion and parallel to said longitudinal axis in the remaining portion, the method comprising the steps of:

inserting a solid cylindrical rod of a forgeable metal material into a guide hole formed in a first of two opposingly engaged dies and pushing said rod so that said rod longitudinally protrudes into a central space defined in said engaged dies until one end of said rod collides against an impression formed on an end face surface in said second die;

exerting a compression force on the other end of said rod to axially press said rod against said impression to cause said rod to gradually and continuously cleave longitudinally into three branched portions which extend obliquely outwardly with respect to said axis of said rod and which are spaced apart circumferentially at equal angular intervals;

continuing the exertion of the compression force on the other end of said partially cleaved rod in the axial direction to extrude said three branched portions respectively into three chambers which are arranged in said second die in a circumferential arrangement at equal angular intervals and which conjoin said central space, each of said three chambers extending parallel to the longitudinal axis of said guide hole and conforming in cross-sectional shape to the axially extending region of each arm of the tulip-shaped metal part to be manufactured;

inserting a counterpunch having three circumferentially spaced elongate legs, which conform in cross-sectional shape to said three chambers, into said three chambers before intrusion of said three branched portions of the metal material into said three chambers, and maintaining the inserted counterpunch in a predetermined position;

applying back pressure to said counterpunch which is maintained in said position and further continuing the exertion of the axial compression force on the other end of said partially cleaved rod until the cleaved and deformed metal material completely fills said central space and said three chambers in said engaged dies and comes into contact with the inserted ends of said respective legs of said counterpunch; and

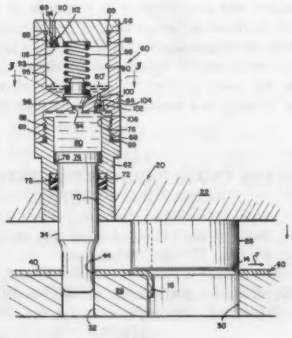
further continuing the exertion of the axial compression force on said partially cleaved rod while further continuing the application of back pressure to said counterpunch to further extrude the metal material into said three chambers and force said counterpunch to gradually retract from said position against the back pressure until the extruded metal material in said three chambers reaches a predetermined length.

4,342,214

PILOT ASSEMBLY FOR PROGRESSIVE DIE MACHINES

J. R. Neuendorf, c/o Modern Die Systems, P.O. Box 445, Elwood, Ind. 46036

Filed Jun. 16, 1980, Ser. No. 159,874
Int. Cl.[3] B21D *11/22*
U.S. Cl. 72—404 **13 Claims**



1. A pilot mechanism for sensing the proper condition of a workpiece in a machine having a first element movable toward and away from a second element in operations on a workpiece disposed therebetween, comprising

a pilot pin mounted in the first element and having a normal projected position from which it is retractable when a force opposed to the movement of said element is applied to the pin,

a hydraulic chamber from which hydraulic fluid is displaced in response to such retraction movement of the pin,

means for preventing displacement of hydraulic fluid from such chamber at a pressure in such fluid below a predetermined high pressure so as to prevent such retraction movement under a retraction force on the pin below a corresponding high force, and for releasing hydraulic fluid from the chamber under a higher pressure produced by a higher retraction force.

4,342,215

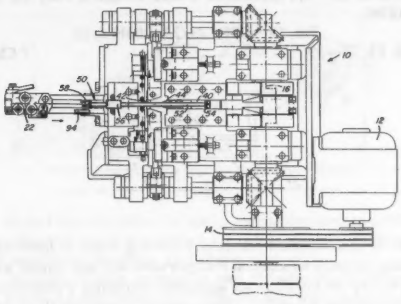
NAIL MACHINE WIRE FEED MECHANISM

Ronald L. Van Horn, Pittsburg, Pa., assignor to United States Steel Corporation, Pittsburgh, Calif.

Continuation-in-part of Ser. No. 17,296, Mar. 5, 1979, abandoned. This application Oct. 9, 1980, Ser. No. 195,588

Int. Cl.³ B21G *3/20;* **B21D** *43/10*

U.S. Cl. 72—422 **4 Claims**



1. Apparatus for feeding wire in predetermined lengths along a wire feed path into the forming die of a nail forming machine in which a continuously operating reciprocating hammerslide is operative to impact the leading end of the wire in the forming die to form a head thereon, said apparatus comprising:

(a) a frame having a wire-backing surface thereon adjacent said wire feed path;

(b) a connecting rod for vertically supporting said frame relative to said wire feed path, said rod being connected between said hammerslide and said frame for imparting reciprocating movement to said frame along said wire feed path between a first position adjacent said forming die and a second position remote therefrom, said connecting rod providing the sole support for said frame;

(c) an elongated dog grip on the opposite side of said wire feed path from said wire-backing surface;

(d) pivot means on said frame connecting with said dog grip intermediate the ends thereof;

(e) spring means between said frame and one end of said dog grip operative to normally bias the other end thereof toward said wire-backing surface;

(f) means on said other end of said dog grip to effect gripping engagement thereof with the wire to be fed as said frame moves toward said second position;

(g) a stationary cam having a cam surface disposed adjacent said second position and operative to engage said one end of said dog grip; and,

(h) a cam follower on said one end of said dog grip operative to urge said other end thereof away from said wire backing surface only when said follower engages said cam surface.

4,342,216

LIMITED STROKE FORCE DELIVERING TOOL

Jack T. Gregory, 1322 Ross St., Petaluma, Calif. 94952

Filed Nov. 10, 1980, Ser. No. 205,427

Int. Cl.³ B21J *9/12;* **B21D** *7/06*

U.S. Cl. 72—453.16 **12 Claims**

1. A hydraulic force delivering tool comprising:

a cylinder having an open end;

a piston slidable in said cylinder;

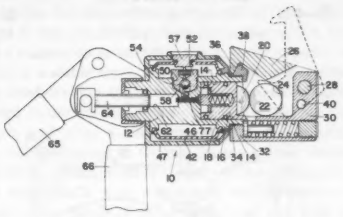
a force-applying member on one of said piston and cylinder;

a flow port opening into said cylinder;

a transfer check valve engaging said port to enable flow into said cylinder only;

a fluid transfer chamber in communication with said flow port;

pump means for forcing fluid from said transfer chamber past said check valve; and



mutually engagable means on said piston and said transfer check valve for lifting said transfer check valve from said port when said piston has traveled through a predetermined stroke.

4,342,217

STRAIN GAGE PICK-UP AND METHOD FOR ADJUSTING SUCH STRAIN GAGE PICK-UP

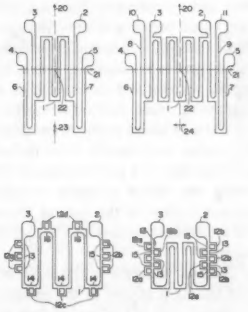
Jürgen Paetow, Darmstadt, Fed. Rep. of Germany, assignor to Hottinger Baldwin Measurements, Inc., Framingham, Mass.

Filed Jul. 18, 1980, Ser. No. 170,019

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1979, 2933676

Int. Cl.³ G01L *25/00*

U.S. Cl. 73—1 B **9 Claims**



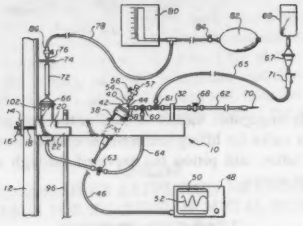
5. A strain gage transducer, comprising spring body means, main strain gage means operatively secured to said spring body means, said main strain gage means having outwardly facing edges, secondary strain gage components operatively connected to said outwardly facing edges of said main strain gage means, said secondary strain gage components having such a shape that the secondary strain gage components extend substantially across or perpendicularly to the direction defined by the respective main strain gage means, said main strain gage means constituting shunting means for said secondary strain gage components for selectively adding or subtracting any one of said secondary strain gage components to or from said main strain gage means by interrupting any one secondary strain gage component or said shunting means to shift the effective center of the grid geometry of said main strain gage means out of its initial position and relative to a given rectangular coordinate system by predetermined amounts which are sufficiently small for compensating off-center load applications.

4,342,218

METHOD AND APPARATUS FOR ZEROING AND CALIBRATING AN INVASIVE BLOOD PRESSURE MONITORING SYSTEM

Forrest Fox, 5607 Jackwood, Houston, Tex. 77096

Filed Jan. 16, 1980, Ser. No. 112,430
Int. Cl.³ G01L 27/00
U.S. Cl. 73—4 R 26 Claims



1. A method of zeroing and calibrating an invasive blood pressure monitoring system with a display device of which an oscilloscope waveform readout is typical and wherein said blood pressure monitoring system incorporates a calibration chamber, a blood pressure transducer having a diaphragm chamber adapted for selective communication with said calibration chamber and, a continuous flushing system is interconnected with said blood pressure monitoring system and continuously flushes the cannula to prevent development of a thrombosis therein, said continuous flushing system functions continuously during said zeroing and calibrating of said blood pressure monitoring system, said method comprising:

purging air from said blood pressure monitoring system and filling the system with sterile fluid including filling the calibration chamber to a predetermined level;

interconnecting the blood pressure transducer with the cardiovascular system of the patient through fluid filled tubing and a cannula inserted into the patient's cardiovascular system;

locating the fluid-air interface in the calibration chamber at the level of the right atrium of the patient's heart;

exposing the diaphragm of said transducer to zero reference pressure while maintaining the closed sterile integrity of said blood pressure monitoring system and setting the oscilloscope such that a zero read-out is indicated;

applying a known desired pressure above the zero reference pressure to said diaphragm and inspecting proper calibration of the pressure monitoring system by inspecting the oscilloscope readout of said known pressure, said known desired pressure above the zero reference pressure being applied to said diaphragm while maintaining the closed sterile integrity of said blood pressure monitoring system;

removing said known desired pressure above the zero reference pressure from said diaphragm after inspection of calibration of the pressure monitoring system is completed; and

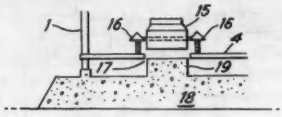
thereafter applying the cardiovascular pressure of the patient to said diaphragm by communicating said cannula with said diaphragm, thus causing said transducer to transmit an electrical waveform signal to said oscilloscope that is displayed on the screen of said oscilloscope.

4,342,219

PREFABRICATED LABORATORY UNIT AND OCTANE ANALYZER

William Stirling, Merseyside, England, assignor to The Associated Octel Company, Ltd., Merseyside, England

PCT No. PCT/GB80/00085, § 371 Date Nov. 28, 1980, § 102(e) Date Nov. 28, 1980, PCT Pub. No. WO80/02578, PCT Pub. Date Nov. 27, 1980
PCT Filed May 9, 1980, Ser. No. 227,106
Claims priority, application United Kingdom, May 15, 1979, 7916763
Int. Cl.³ G01L 23/22; E04H 5/02
U.S. Cl. 73—35 7 Claims



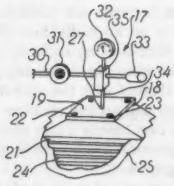
1. A prefabricated laboratory having walls, a floor and a ceiling forming an integral transportable unit and within which is or may be installed an apparatus requiring a substantially vibration-free mounting, characterised in that the floor of the unit has a hole therein, which when the unit is in position at a desired site, exposes a prepared foundation for said apparatus, and wherein there is mounted in the said unit immediately above said hole a plinth mounting or serving to mount said apparatus, said plinth being mounted on jacking means which permit said plinth, when the unit is in the desired position, to be lowered onto the prepared foundation which is exposed through said hole.

4,342,220

ENGINE TESTING METHOD AND APPARATUS

Charles R. Catchpole, and Michael E. Horton, both of Box 20042, Billings, Mont. 59104

Filed Jul. 25, 1980, Ser. No. 172,388
Int. Cl.³ G01M 3/10
U.S. Cl. 73—49.7 8 Claims



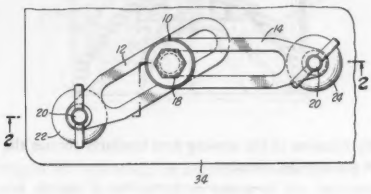
1. Testing apparatus for an engine including an aftercooler and a turbocharger, said apparatus including adapter means capable of being operatively connected to the air chamber section of said aftercooler, fastening means engageable with said adapter means capable of securing said adapter means to said engine, a passage through said adapter means, means for supplying a gas under superatmospheric pressure through said adapter means, pressure measuring means associated with said gas supplying means, and pressure relief means associated with said gas supplying means, whereby securing said adapter means to said engine and supplying gas under superatmospheric pressure through said apparatus to said air chamber of said aftercooler will cause the pressurized gas to be forced through any flaws in said aftercooler and produce bubbles in a liquid medium disposed on the opposite side of said aftercooler from said air chamber.

4,342,221

ENGINE CYLINDER HEAD PORT CLOSURE PAD CLAMP

Fred H. Silvey, Rowland Heights, Calif., assignor to Irontite Products, Co. Inc., El Monte, Calif.

Filed Jul. 28, 1980, Ser. No. 173,224
Int. Cl.[3] G01M *3/04*
U.S. Cl. 73—49.7 2 Claims



1. A port closure clamp for use in sealing the surface ports of an engine part such as a cylinder head or the like possessing fluid circulating conduits, said clamp comprising:

a. mounting means secured to said cylinder block having a mounting part positioned adjacent said mating surface of said cylinder block,

b. an arm on said mounting part extending parallel to said mating surface,

c. a port closure member on said arm,

d. tightening means for tightening said closure member against said cylinder head to close a fluid circulating conduit of said cylinder head, and

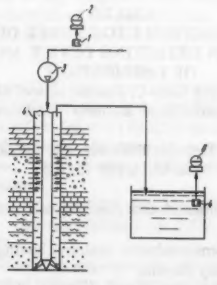
e. a longitudinal slot in said arm through which said mounting part extends whereby said arm may be radially movable with respect to said mounting part whereby the effective length of said arm may be shortened or lengthened.

4,342,222

METHOD FOR THE DETERMINATION OF DEPTH OF A FLUID-SATURATED STRATUM AND FLUID TYPE

Stanislav A. Alekhin, Chilanzar, Kvartal 24, 53, kv. 89; Vitold M. Bakhir, Gaidara, 7-A, kv. 17; Raisa I. Born, Chilanzar, kvartal 24, 53, kv. 89; Tatyana M. Bakhir, proezd Gaidara, 7-A, kv. 17, all of, Tashkent, and Aman I. Khusandzhanov, poselok neftyanikov, Surkhandarinskaya oblast, Kumkurgan-2, all of U.S.S.R.

PCT No. PCT/SU79/00086, § 371 Date Nov. 27, 1980, § 102(e) Date Nov. 25, 1980, PCT Pub. No. WO80/02050, PCT Pub. Date Oct. 2, 1980
PCT Filed Sep. 28, 1979, Ser. No. 224,552
Claims priority, application U.S.S.R., Mar. 27, 1979, 2736512
Int. Cl.[3] E21B *49/00*
U.S. Cl. 73—153 1 Claim



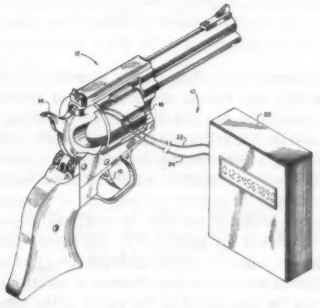
1. A method for the determination of depth of a fluid-saturated stratum and type of a fluid preferably such as mineralized water, oil and gas released during drilling, comprising suspending the supply of drilling mud to a well upon revealing a fluid in the drilling mud leaving the well and restoring the supply of the drilling mud to the well after a certain time lapse, marking the time of restoration of supply of the drilling mud to the well and the time of appearance at the surface of the batch of the drilling mud diluted with the fluid saturating the stratum to be used for the determination of depth of the stratum, characterized in that the drilling mud fed to the well is pretreated in such a manner as to maintain the original value of its redox potential at a stable level, the value of redox potential of the drilling mud leaving the well is continuously measured and compared to the original value of redox potential of the drilling mud, and upon a change in the redox potential of the drilling mud indicating to the presence of a fluid saturating the stratum in the drilling mud the supply of the drilling mud to the well is suspended, with subsequent measurement of redox potential of the batch of the drilling mud saturated with the fluid which is compared to known normal values of redox potential to determine the type of the fluid.

4,342,223

METHOD AND APPARATUS FOR CALIBRATING FIRING PIN IMPACT

James L. Smith, 4001 Sul Ross, Apt. 330, San Angelo, Tex. 76904

Filed Jul. 21, 1980, Ser. No. 170,824
Int. Cl.[3] G01L *1/22*
U.S. Cl. 73—167 7 Claims



1. An apparatus for calibrating the impact force of a firing pin of a firearm, said apparatus comprising:

a casing insertable into the firing chamber of the firearm, said casing having a cap for engaging the firing chamber housing when said casing is fully inserted into said firing chamber;

means disposed in said casing for transducing the mechanical effect of an impact to an electrical effect, said transducing means being anchored to said casing;

means electrically coupled with said transducing means for detecting the electrical effect of an impact; and,

actuating means mechanically coupled to said transducing means and movable with respect to said casing for transmitting the firing pin impact force to said transducing means.

4,342,224

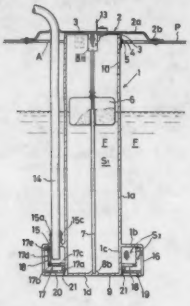
HOUSING UNIT FOR LIQUID GAUGE AND STRAINER

Kunio Hara, Kawasaki, and Shigeru Kimura, Kamakura, both of Japan, assignors to Nifco Inc., Yokohama, Japan

Continuation of Ser. No. 90,227, Nov. 9, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,459
Claims priority, application Japan, Nov. 9, 1978, 53-137341
Int. Cl.[3] G01F *23/10*
U.S. Cl. 73—290 R 4 Claims

1. A housing unit for use in a liquid reservoir, adapted to unitize a liquid level gauge, liquid suction pipe, strainer, and

housing, comprising a housing having at least two chambers, said at least two chambers including a generally cylindrical first chamber open at one end and substantially closed at the other end and a generally toroidal second chamber concentric with said first chamber, said second chamber adjacent to and encircling the substantially closed end of said first chamber, said second chamber having an annular opening adapted to receive a filter element therethrough and an annular lid adapted to close said opening while positioning a filter element within said second chamber, a cover adapted to be removably attached to and close the open end of said first chamber and removably suspend said housing unit within said reservoir, said first chamber adapted to contain a liquid level gauge and said second chamber adapted to contain a strainer, means within said first chamber for guiding a movable portion of the liquid



gauge, said strainer including a filter element adapted to be confined within said second chamber by said annular lid, at least two openings in said first chamber for permitting passage of a liquid and air into and out of said first chamber, and second chamber having a first opening for admitting liquid into the chamber on one side of said filter element and a second opening for permitting the insertion of one end of a liquid suction pipe on the other side of the filter element, said filter element adapted to embrace an open end of the liquid suction pipe inserted therein, whereby the movable portion of a liquid level gauge contained within said first chamber is unrestricted when moving from the end closed by the cover to the substantially closed end thereby permitting said liquid level guage a range of indication which extends to the substantially closed end of said first chamber.

4,342,225

DEVICE FOR THE INTERNAL INSPECTION OF PIPELINES

Jan Jandera, and Jan Studnicka, both of Prague, Czechoslovakia, assignors to Ceske plunarenske pdniky, koncern, Prague, Czechoslovakia

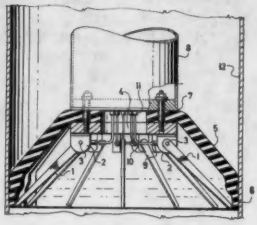
Filed Nov. 7, 1980, Ser. No. 204,951

Claims priority, application Czechoslovakia, Nov. 23, 1979, 8075-79

Int. Cl.³ G01B 5/28, 21/14

U.S. Cl. 73—432 R **12 Claims**

1. A device for the inspection of the internal cross section of pipelines under operation, comprising a supporting body adapted to be introduced into the pipeline, a recording device, at least one packing cuff on the supporting body, and a plurality of sensing arms pivotally mounted upon the supporting body, the outer ends of the sensing arms constantly engaging the internal periphery of the portion of the packing cuff which engages the internal surface of the pipeline, and a plurality of displacement sensing elements attached to the supporting body, each of such sensing elements having a stub-shaft to which the inner end of a respective sensing arm is connected,



whereby rotation of the sensing arm similarly rotates the stub shaft of the sensing element.

4,342,226

TURN INDICATOR FOR SHIPS OR AIRCRAFT

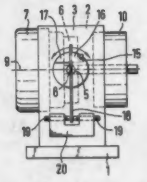
Rudolf Engel, St. Goar, and Horst P. Meier, Oberwesel, both of Fed. Rep. of Germany, assignors to Engel & Meier oHG, St. Goar, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,906

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946308

Int. Cl.³ G01P 9/02

U.S. Cl. 73—504 **10 Claims**



1. Turn indicator for indicating the turning direction and the turning speed of a change in course of a ship or aircraft, comprising motor means; carrier means; said motor means being freely movably mounted between supports by said carrier means; said carrier means having an axle; leaf spring means having an upper end fixedly connected to said axle; said spring means having a loosely guided lower end; measuring bridge means on said spring means; and indicating means connected to said bridge means through amplifier means.

4,342,227

PLANAR SEMICONDUCTOR THREE DIRECTION ACCELEKATION DETECTING DEVICE AND METHOD OF FABRICATION

Kurt E. Petersen, and Anne C. Shartel, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,685

Int. Cl.³ G01P 15/125

U.S. Cl. 73—510 **10 Claims**

1. A planar semiconductor acceleration detecting device comprising

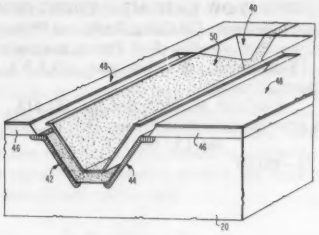
a substrate of semiconductor material having an elongated v-shaped cavity therein,

a v-shape cantilever beam arranged in said v-shaped cavity and depending from one end thereof for movement into and out of said cavity and movement from side to side in said cavity,

electrodes of conductive material arranged on the sloping

walls of said cavity and on the sloping walls of said beam, and

an electronic circuitry coupled to said electrodes and arranged for indicating the degree of acceleration to which said device is subjected in terms of the instantaneous capacity between said electrodes in said cavity and on said beam.

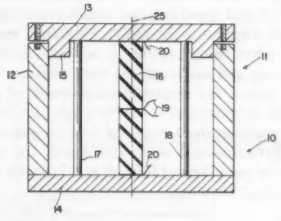


4,342,228

ANGULAR ACCELEROMETER

Howard T. Savage, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 4, 1980, Ser. No. 203,938
Int. Cl.³ G01P *15/08*
U.S. Cl. 73—517 A **18 Claims**



1. A device for measuring acceleration comprising:

a compression housing having an axis;

magnetoelastic means positioned in and axially compressed by the housing;

magnetic biasing means positioned in the housing; and

means for measuring a voltage generated in the magnetoelastic means;

whereby when the device is angularly accelerated, a voltage is generated in the magnetoelastic means, said voltage being an indication of the acceleration.

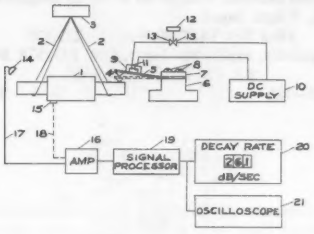
4,342,229

APPARATUS AND METHOD FOR THE NON-DESTRUCTIVE TESTING OF THE PHYSICAL INTEGRITY OF A STRUCTURAL PART

Frank Massa, Hingham, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees

Filed Aug. 25, 1980, Ser. No. 180,680
Int. Cl.³ G01H *1/00, 9/00*
U.S. Cl. 73—579 **17 Claims**

1. In combination in an apparatus for measuring the degradation of the physical integrity of a structural part, such as may occur from the presence of invisible flaws in the structural material or from vibrational fatigue of the structural material during the operational use of the structural part, support means for holding said structural part, said support means characterized in that it presents negligible resistance to the free natural vibration of said structural part, force excitation means associated with said supported structural part, said force excitation means characterized in that an impulse force of short duration may be imparted to said structural part upon command, said impulse force characterized in that it is of sufficient magnitude to excite said structural part into a free resonant mode of vibration, transducer means for converting the amplitude of vibration of said freely vibrating structural part to an electrical signal, means for continuously measuring the decaying amplitude of said electrical signal over a specified period of time of sufficient duration to include a plurality of oscillatory cycles of said vibrating structural part immediately following the excitation of said freely suspended structural part by said impulse force, and indicator means for indicating the logarithm of said measured decaying amplitude over said specified period of time, whereby said logarithm of said measured decaying amplitude is an indication of the physical integrity of said vibrating structural part.

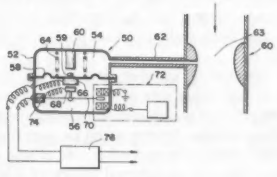


4,342,230

PRESSURE SENSOR AND SENSING METHOD

Kenji Okamura, and Kenji Masaki, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jun. 17, 1980, Ser. No. 160,386
Claims priority, application Japan, Jun. 19, 1979, 54-76347
Int. Cl.³ G01L *9/00*
U.S. Cl. 73—702 **21 Claims**



1. A pressure sensor comprising:

a sensor casing having therein a pressure chamber communicated with a fluid passage for introducing pressurized fluid;

a diaphragm defining said pressure chamber and expanding and adapted to move in response to fluid pressure introduced into said pressure chamber;

means for converting fluid pressure into a length of time in which electric current flows through a sensor circuit, said means including a switch means having first and second parts separated from each other, said first part of said switch means being secured on said diaphragm so that it moves longitudinally with respect to said second part together with said diaphragm and said second part oscillating with respect to said first part with a substantially constant frequency and amplitude, said means generating an output within a period

when said first and second parts are located at a given relationship; and

an arithmetic circuit for calculating an average pressure based on the output of said converting means.

4,342,231

DIFFERENTIAL PRESSURE TRANSMITTER

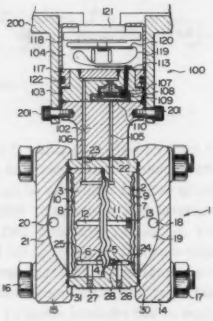
Yoshimi Yamamoto, Ibaraki; Yoshitaka Matsuoka, Mito; Syozo Kasai; Yukio Takahashi, both of Katsuta; Takeo Nagata, Hitachi; Akira Nagasu, Ibaraki; Tomomasa Yoshida, Mito, and Satoshi Shimada, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 217,025

Claims priority, application Japan, Dec. 19, 1979, 54-164126

Int. Cl.³ G01L *7/08, 9/06*

U.S. Cl. 73—721 **11 Claims**



9. A differential pressure transmitter comprising:

a pressure receiving body assembly;

two seal diaphragms disposed at both sides of said pressure receiving body assembly and forming, on both sides of said pressure receiving body assembly, pressure receiving chambers for receiving pressures of a high-pressure fluid and a low-pressure fluid, respectively,

a central diaphragm disposed in said pressure receiving body assembly and defining two isolated chambers which communicate with respective one of said pressure receiving chambers;

a semiconductor sensor having a resistance pattern formed on one side thereof and having thick-walled peripheral portion and thick-walled central portion at the other side thereof;

a hollow supporting member attached to the peripheral portion of said other side of said semiconductor sensor;

a sealing member to which said supporting member is fixed, said sealing member having a first passage for introducing a first fluid pressure to said other side of said semiconductor sensor through an internal cavity of said supporting member and a second passage for introducing a second fluid pressure to said one side of said semiconductor sensor;

a ceramic substrate disposed in said second conduit adjacent to said semiconductor sensor, said ceramic substrate being adapted to transmit to the outside an electric signal corresponding to the pressure and generated by said semiconductor sensor;

a connector casing portion encasing connectors for electrically connecting said ceramic substrate to the outside so that said electric signal may be delivered to the outside; and

a connecting member having a third passage and a fourth passage through which said first and second passages are communicated with corresponding pressure receiving chambers;

said semiconductor sensor being disposed such that the side thereof having said resistance pattern faces said pressure receiving body assembly.

4,342,232

VORTEX FLOW RATE MEASURING DEVICE

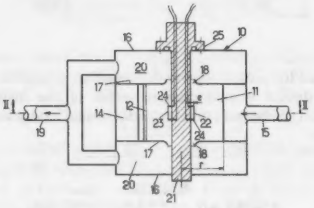
Pierre Calvet, Toulouse; Gil Ching, Paris, and Philippe Rolland, Saint-Orens de Gameville, all of France, assignors to Societe pour l'Equipement de Vehicules (S.E.V.), Issy-les-Moulineaux, France

Filed Oct. 16, 1980, Ser. No. 197,613

Claims priority, application France, Oct. 18, 1979, 79 25950

Int. Cl.³ G01F *1/70*

U.S. Cl. 73—861.05 **6 Claims**



1. A flowmeter for measuring the rate of volumetric flow of a fluid comprising: a chamber having a rotational symmetry about an axis; fluid inlet means formed at the periphery of said chamber; fluid outlet means for axial flow of said fluid out of said chamber, cooperating with said inlet means for generating a vortex in said chamber upon circulation of said fluid through said chamber; and speed detector means comprising a transmitting thermo-element wire and a receiving thermo-element wire, said wires being parallel to said axis, angularly spaced about said axis and located at the same distance from said axis in a zone where the circumferential speed of the vortex is substantially proportional to the flow rate, further comprising means for applying short electrical heating pulses to the transmitting thermo-element wire and means for detecting the arrival of the pulse heated fluid in contact with the receiving thermo-element wire.

4,342,233

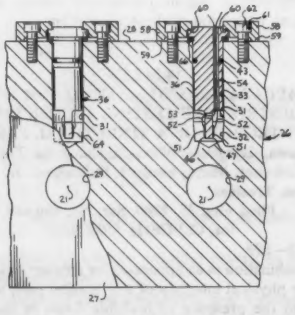
LOAD DETECTING PROBE

Richard Edmondson, and Dale A. Wisebaker, both of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Filed Aug. 18, 1980, Ser. No. 178,728

Int. Cl.³ G01L *1/22*

U.S. Cl. 73—862.06 **21 Claims**



1. In a machine tool having a frame, a tool back-up member,

the tool back-up member having a working face including means for defining a tool mounting station, said back-up member being constructed and arranged to support a tool during a working period by sustaining compressive loads through said face at the tool mounting station along an axis, a cavity having a boundary wall formed in said back-up member and extending relative to said axis laterally from a point underlying said face adjacent said mounting station to a point spaced from said mounting station, an elongated load sensing probe disposed in said cavity and extending longitudinally between said points, said sensing probe having an inner end in contact with an area of said boundary wall, and sensing means on said probe to form an electrical signal proportional to strain in said back-up member at said area of said cavity wall.

4,342,234

APPARATUS FOR EXTRACTING A HOT GAS SAMPLE FROM A CHAMBER AND FOR FEEDING THE SAMPLE TO AN ANALYZER

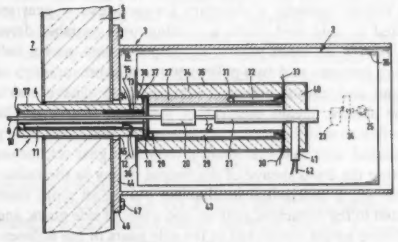
Tibor Bernath, Hauptstrasse 48, D-3000 Hannover 91, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,648

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950744

Int. Cl.³ G01N *1/22*

U.S. Cl. 73—863.12 5 Claims



1. Apparatus for extracting a hot gas sample from a chamber and for feeding the sample to an analyzer, in particular for monitoring the content of organic solvents or similar constituents in the air in the chamber, which such solvents or similar constituents represent an explosion hazard or are otherwise harmful when they reach a specific concentration, such apparatus comprising a sampling probe which can be introduced into the chamber through an opening in the chamber wall and is connected outside the chamber with the analyzer, which has a gas filter and a detector, there being a suction pump to draw off the sample through the probe to the analyzer, as well as a heating jacket upstream of the analyzer, wherein the analyzer (2) is located directly at the opening (4) in the chamber wall (5, 6) and is directly connected to the sampling probe (8), the heating jacket (9) surrounds the sampling probe (8) and extends beyond the chamber wall (5, 6) through the chamber-wall opening (4) up to the analyzer (2), the analyzer (2) has a heating apparatus (27) separate from the heating jacket (9) of the sampling probe (8) and the heating jacket (9) and heating apparatus (27) each has its own temperature sensor (14 and 32, respectively) for separate heating and temperature control.

4,342,235

BALL NUT WITH INTERNAL CROSSOVER FOR BALL RECIRCULATION

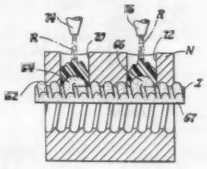
Robert L. Benton, Bay City, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 92,432, Nov. 7, 1979, Pat. No. 4,272,476.

This application Dec. 10, 1980, Ser. No. 214,888

Int. Cl.³ F16H *1/18*

U.S. Cl. 74—424.8 R 3 Claims



1. A ball nut for a ball nut and screw assembly having a metallic body with an internal helical ball track formed therein adapted to receive a screw member having a helical ball track thereon, a cylindrical opening formed in said nut, a ball track crossover of plastic material molded into said opening, said crossover having a side wall adhering to the side wall of said opening, said crossover having internal crossover track means to feed balls from one track to an adjacent track of said ball nut, said nut being produced by selecting a first ball nut having an internal helical thread with a predetermined lead to provide a grooved track for a train of balls that drivingly interconnects the nut to an associated screw, forming an access hole in the ball nut that has a dimension spanning at least two adjacent turns of the track, forming an insert for said access opening having a grooved crossover path for circulating the balls of the ball train from one turn of the track back to another turn thereof, placing the insert in the access opening with the crossover path aligned to interconnect the selected turns of the track, utilizing the ball nut and insert as a master mold to mold a positive profile of a portion of the track of the master mold and the crossover path, removing the molded profile from the master mold, selecting a second ball nut having a grooved track and an access hole which correspond to that of the first ball nut, inserting the molded profile into the second ball nut so that the positive track formed on the profile fits in the track of the second ball nut and so that the positive crossover path of the profile extends into and closes the access hole of the second ball nut, flowing a quantity of liquified plastic material into the access hole of said second ball nut and onto said positive profile of said crossover path, allowing said plastic material to harden and removing the molded profile from the second ball nut to thereby complete the formation of a ball nut with a molded crossover path which corresponds in detail to that of said master mold.

4,342,236

CRANKSHAFT WITH LAMINATED COUNTERWEIGHT

Robert G. Everts, 2301 W. Colt Rd., Chandler, Ariz. 85224

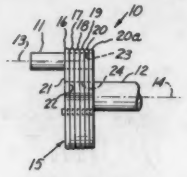
Continuation of Ser. No. 946,216, Sep. 27, 1978, abandoned. This application Oct. 22, 1980, Ser. No. 199,629

Int. Cl.³ F16C *3/04*

U.S. Cl. 74—603 6 Claims

1. A crankshaft with a laminated counterweight, comprising: a stack of a plurality of identical, pressed together, substantially flat plates, each plate having a first and a second shaft mounting hole therethrough, at least one depression in one side, and at least one boss projecting as a stud from and integral with the other side, said depression and boss of each plate being coaxially aligned with each other, said depression and said boss of each plate being coaxially aligned with each other, said depression and said boss being peripherally bounded by geometrically similar walls

which extend substantially normal to the sides of said plate, the bottom of said depression being located between said sides at a spacing from the side from which said boss projects, whereby to leave a substantial shear web between said two sides, between the bottom of said depression and the base of said boss, said plates being stacked parallel to one another, with the boss of one plate in the



depression of its neighbor plate and making a net or tighter fit, all of said first holes being coaxial, and all of said second holes being coaxial;

a first shaft tightly fitted in said first holes and projecting from a first side of the stack; and

a second shaft tightly fitted in said second holes, and projecting from a second side of the stack.

4,342,237

FEEDING APPARATUS FOR MACHINE TOOLS

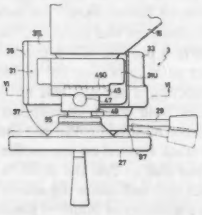
Kikuo Tsutsui, Isehara, Japan, assignor to Amada Company, Limited, Kanagawa, Japan

Filed Aug. 22, 1980, Ser. No. 180,432

Claims priority, application Japan, Aug. 17, 1979, 54-104043

Int. Cl.³ F16D *67/00*

U.S. Cl. 74—625 **7 Claims**



1. Apparatus for feeding a workpiece to a machine, either manually or by power means, comprising:

a work table means for securing said workpiece to said machine;

lead screw means, the rotation of which changes the vertical height of said work table means;

power driving means selectively connectable to said screw means;

manual driving means selectively connectable to said screw means;

selector means operatively connected to actuate said power driving means;

means attached to said manual driving means such that when said work table means is moved by said manual driving means, said power driving means is rendered inoperable;

wherein said manual driving means comprises:

a handwheel attached to a shaft;

said shaft being operatively connected to said lead screw means;

spring biased clutch means, disposed about said shaft, for selectively connecting said handwheel to drive said lead screw means;

wherein said handwheel is operatively connected to said lead screw means when said handwheel is axially shifted along said shaft; and

wherein the operative position of said handwheel and the operative position of said selector means are such that they occupy the same vertical plane in space, whereby only one of said manual and power driving means may be driving said lead screw means at any given time.

4,342,238

AUTOMOTIVE DRIVE SYSTEM WITH CONTINUOUSLY VARIABLE TRANSMISSION

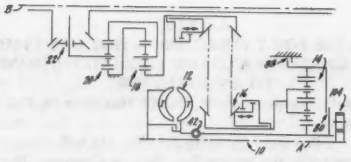
Derek Gardner, Hitchin, England, assignor to Borg-Warner Limited, Letchworth, England

Filed Jan. 28, 1980, Ser. No. 115,827

Claims priority, application United Kingdom, Sep. 6, 1979, 7931188

Int. Cl.³ F16H *37/00, 37/08*

U.S. Cl. 74—689 **3 Claims**

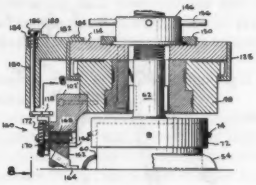


1. A transmission mechanism comprising a hydrodynamic device adapted to be driven by a prime mover, said device including impeller and turbine elements, a clutch means adapted to lock said elements together, a first shaft connected to said turbine element, a planetary forward-reverse gear set connected to said first shaft, a continuously variable drive system having an input pulley, an output pulley, and a belt extending between said two pulleys to transfer power, each of said input and output pulleys having a fixed sheave and a movable sheave, means connecting the fixed sheave of the input pulley to said forward-reverse gear set, said input pulley being coaxial with said first shaft, a reduction gear set, means connecting the fixed sheave of the output pulley to the reduction gear set, a differential mechanism having an input shaft connected to the reduction gear set and a pair of side gears, and output drive means connected to the side gears of the differential mechanism, whereby said output drive means will be driven by the prime mover through said hydrodynamic device and said continuously variable drive system, wherein said hydrodynamic device, first shaft, planetary gear set, and input pulley rotate about a first axis, and said output pulley, reduction gear set and differential mechanism rotate about a second axis, and wherein said reduction gear set includes a high-speed planetary gear train and a high-torque planetary gear train, a separate sun gear for both gear trains, each gear train having an individual ring gear and pinion carriers having pinion gears mounted thereon, said output pulley fixed sheave being connected to the ring gear of the high-speed train to drive the planet pinion gears in the same direction engaging the sun gear at a reduced gear ratio through the high-spee... train pinion carrier, said sun gear being connected to the high-torque train ring gear, a shaft connected to the pinion carrier of the high-speed gear train and the plurality of pinion gears of the high-torque gear train to drive the high-torque train pinion gears and the pinion carrier in the same direction to effect a second reduction in the gear ratio, where the pinion carrier for the high-torgue planetary gear train is an intergral segment of the differential mechanism.

4,342,239
CANOPY CUTTING DEVICE

William C. Feamster, III, 4013 Nina Dr., Chesapeake, Va. 23321

Division of Ser. No. 884,245, Mar. 7, 1978, Pat. No. 4,236,428.
This application Mar. 7, 1980, Ser. No. 128,371
Int. Cl.[3] B23B *5/14*
U.S. Cl. 82—4 C 6 Claims



1. A canopy cutting device for machining canopies and the like in constricted spaces, said device comprising a housing including a base plate, a bearing mounted on said housing and having an axis, rotary adjustment means for shifting the position of said bearing along its axis by an amount in proportion to the amount of rotation imparted to said rotary adjustment means, a ring gear mounted on said bearing for rotation about said axis of said bearing, a cutting tool mounted on and externally of said ring gear, a pinion gear mounted for rotation on said housing and engageable with teeth extending about the outer periphery of said ring gear, means for driving said pinion gear, means for automatically progressively advancing the cutting tool including a cutting tool holder slidably mounted on the outer periphery of the ring gear for radial movement inwardly and outwardly and supporting the cutting tool, a feed screw for radially moving said tool holder, a worm and gear assembly drivingly coupled to the feed screw and to an indexing wheel extending beyond the perimeter of the ring gear and carried in a circular path during rotation of the ring gear, and at least one feed pin oriented parallel to said axis and selectively positionable and manually movable into said circular path of movement of the indexing wheel to intercept and rotate the indexing wheel intermittently under the manual control of the operator through a selected increment for driving the feed screw to radially advance the cutting tool holder through one step.

4,342,240
METHOD AND APPARATUS FOR FEEDING ROD-LIKE WORKPIECES TO A SEVERING MACHINE

Ruprecht Gaiser, Baden-Baden, and Paul Stolzer, Achern, both of Fed. Rep. of Germany, assignors to Keuro Maschinenbau Gesellschaft mit beschränkter Haftung & Co. Kommanditgesellschaft, Achern, Fed. Rep. of Germany

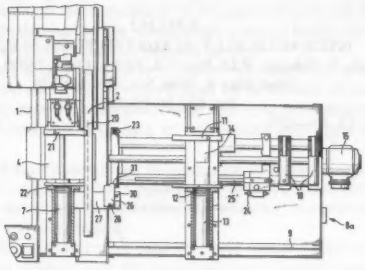
Filed May 8, 1980, Ser. No. 148,174
Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921194
Int. Cl.[3] B23D *51/04*
U.S. Cl. 83—42 9 Claims

1. In a method of periodically feeding a rod-like workpiece into a severing machine for severing predetermined lengths in a cutting plane during cutting steps alternating with feeding steps; openable and closable clamping jaws immobilize the workpiece adjacent the cutting plane during each cutting step and openable and closable feed jaws grasp the workpiece at a predetermined distance upstream of the cutting plane as viewed in the direction of feed for advancing the workpiece through the cutting plane by a distance corresponding to the desired length to be cut; the improvement comprising the following repetitive steps;

(a) opening the feed jaws subsequent to the feeding step and the closing of the clamping jaws and prior to the completion of the cutting step immediately succeeding said feeding step;

(b) subsequent to step (a) and prior to the completion of said cutting step immediately succeeding said feeding step, displacing said feed jaws in an upstream direction through the distance corresponding to the length of the successive feeding step;

(c) subsequent to step (b) and prior to the completion of said cutting step immediately succeeding said feeding step,



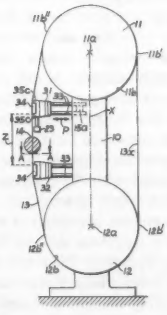
closing said feed jaws about the workpiece for immobilizing the same; and

(d) supporting, during each cutting step, the workpiece adjacent said cutting plane on the upstream side thereof against the effect of a cutting force generated during each cutting step.

4,342,241
BAND SAWING METHOD

Urban Eklund, Soderhamn, Sweden, assignor to Kockums Industri AB, Malmö, Sweden

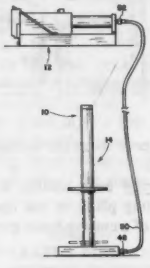
Continuation-in-part of Ser. No. 709,852, Jul. 29, 1976, Pat. No. 4,085,636. This application Jan. 30, 1978, Ser. No. 873,263
Claims priority, application Sweden, Jan. 27, 1977, 7700830
Int. Cl.[3] B23D *55/08*
U.S. Cl. 83—56 5 Claims



1. In a method of continuously preserving the correction position of a cut on a saw blade which has a row of teeth extending from a front edge to a root line, said blade being installed in a band sawing machine so that it runs over respective flat peripheral edges of two spaced-apart pulleys that are rotatable about respective parallel rotational axes mounted in a common plane, said blade being guided by spaced-apart blade guides having a guide surface which is substantially parallel to said common plane, said blade being pressed by inherent tension against said guide surfaces such that said blade is free of substantial twist, said method comprising the steps of: continuously sensing during sawing any lateral displacement of a portion of the saw blade between said blade guides from a position of correct cut, countering adverse effect of the lateral

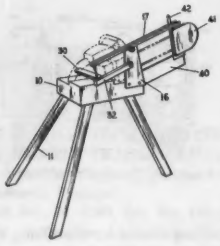
displacement by applying an arcuate corrective force to at least one of said blade guides which is proportional to the lateral deviation of the blade from the position of correct cut to cause said blade to move laterally in proportion to and in the opposite sense of the sensed lateral displacement of the blade irrespective of the direction of the sensed lateral displacement.

4,342,242
HYDRAULICALLY ACTUATED FOOD SLICER
Benny R. Schaum, P.O. Box 172, Bixby, Okla. 74008
Filed May 5, 1980, Ser. No. 146,770
Int. Cl.³ B26D *1/03*
U.S. Cl. 83—437 **4 Claims**



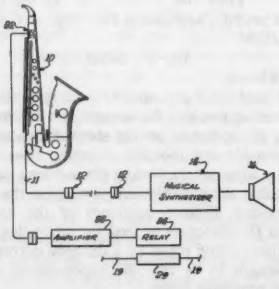
1. A food handling apparatus comprising food receiving receptacle means, cutting grid means disposed at one end of the food receptacle means, horizontally reciprocal piston means disposed in said food receptacle means and movable in alternate directions toward and away from the cutting grid means, one direction of movement of the piston means operable for forcing the food through the cutting grid means for discharge from the receptacle means and the opposite direction of movement of the piston means operable for restoring the receptacle means to a food receiving position, foot lever means, hydraulic means operably connected between the foot lever means and the piston means for providing said movement for the piston means, wherein the hydraulic means comprises a cylinder housing, a horizontally slidable piston rod means disposed within the housing and having a longitudinally extending central passageway therein for receiving a hydraulic fluid, head means carried by the piston rod means and engagable with the piston means, spring means disposed in the passageway means and operably connected with the head means for constantly urging the piston rod means toward the contracted position thereof within the cylinder housing and conduit means connected between the passageway and the foot lever means for communicating the hydraulic fluid therebetween whereby actuation of the foot lever creates a pressure differentials in the passageway surrounding the spring means for providing said movement for said piston means, the foot lever means comprising telescopically arranged fluid filled tubular members in communication with the conduit means, and outwardly extending foot lever means secured to one of said telescopic tubular members for moving thereof with respect to the other telescopic tubular member for creating said pressure differentials in the passageway, and the piston means comprising a slab-like body member movable in alternate directions toward and away from the cutting grid means, said slab-like body member being engagable with the food for discharging the food from the receptacle upon one direction of movement of the piston means, and axially arranged protrusion members extending from one face of the body in a direction toward the cutting grid means for intermeshing therewith in one relative position therebetween.

4,342,243
CHAIN SAW STAND
Kendall Porritt, 12918 64th St., SE., Alto, Mich. 49302
Filed Dec. 5, 1980, Ser. No. 213,383
Int. Cl.³ B27B *17/02*; B27G *19/00*
U.S. Cl. 83—574 **5 Claims**



1. A chain saw stand comprising:
a stand having a top surface;
means to anchor a chain saw on said top surface with the chain saw blade extending in front of said stand;
a top lever pivotably mounted to said stand above said top surface so as to be adjacent to and generally parallel with said blade and slightly above it;
a throttle lever pivotably mounted on said surface positioned to engage the throttle trigger of said chain saw; and
resilient connecting means between the end of said top lever remote from said blade and the end of said throttle lever nearest said trigger whereby when a log is brought in contact with said blade, said log will cause said top lever to pivot downwardly which via said connecting means will cause said throttle lever to pivot upwardly to actuate said trigger to accelerate the engine of said saw for cutting said log and whereby the resilience of said connecting means will permit said top lever to continue pivoting downwardly while said log is moved downwardly during cutting after said throttle lever has completely depressed said trigger and cannot be pivoted upwardly further.

4,342,244
MUSICAL APPARATUS
William R. Perkins, 3872 Cody Rd., Sherman Oaks, Calif. 91403
Continuation of Ser. No. 853,255, Nov. 21, 1977, abandoned.
This application Jan. 31, 1980, Ser. No. 117,117
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **2 Claims**



1. A musical instrument adapted to produce acoustic tones;
playing means, mounted on said musical instrument, for causing said musical instrument to produce selected acoustic tones;

an electrophone operably attached to said musical instrument;

a quasi-keyboard for said electrophone—said quasi-keyboard being mounted on said musical instrument, and being adapted to cause the electrophone to produce electronic sounds regardless of whether or not said musical instrument is producing acoustic tones;

means, interconnecting said electrophone and said quasi-keyboard, for causing said electrophone to produce electronic sounds that are concomitant with selected acoustic tones;

said musical instrument is a trombone having a slide tone-control element;

tone-signal-producing means comprising a variable resistor;

means for associating said variable resistor with said slide tone-control element of said trombone musical instrument;

said variable resistor being thus sensitive to the instantaneous position of said slide tone-control element of said trombone, and thus producing an instantaneous resistive value and a tone signal associated with the instantaneous position of said slide tone-control element.

2. A musical instrument adapted to produce acoustic tones;

playing means, mounted on said musical instrument, for causing said musical instrument to produce selected acoustic tones;

an electrophone operably attached to said musical instrument;

a quasi-keyboard for said electrophone—said quasi-keyboard being mounted on said musical instrument, and being adapted to cause the electrophone to produce electronic sounds regardless of whether or not said musical instrument is producing acoustic tones;

means, interconnecting said electrophone and said quasi-keyboard, for causing said electrophone to produce electronic sounds that are concomitant with selected acoustic tones;

said musical instrument comprising an integral octave key adapted to produce acoustic tones one octave above the normal acoustic tones of said musical instrument;

means comprising an octave-key tone switch associated with said octave key, for automatically causing said electrophone to produce electronic sounds that are concomitant with said octave acoustic sounds.

4,342,245

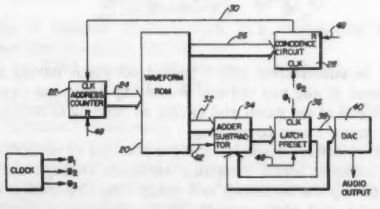
COMPLEX WAVEFORM GENERATOR FOR MUSICAL INSTRUMENT

Glenn M. Gross, Chicago, Ill., assignor to Norlin Industries, Inc., White Plains, N.Y.

Continuation of Ser. No. 88,551, Oct. 26, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 238,764

Int. Cl.³ G10H *1/06, 7/00*

U.S. Cl. 84—1.01 **25 Claims**



1. A tone source apparatus for an electronic musical instrument comprising:

a source of clock pulses having a period defining a unit time interval;

memory means having a plurality of sequential addresses each storing an instruction defining a segment of a waveform, each of said instructions comprising at least first, second and third sub-instructions comprising, respectively, a code representing the time duration measured in terms of a number of said unit time intervals, a code representing a value corresponding to at least the amplitude variation per said unit time interval and a code representing the direction of slope of the associated waveform segment;

an address counter clockable for accessing said memory addresses in sequence;

coincidence means for clocking said address counter in response to the occurrence of a number of said unit time intervals equal to the value of said first sub-instruction of the currently accessed memory address;

counting means responsive to said clock pulses and to said second and third sub-instructions for reversibly counting up or down in accordance with said third sub-instruction in increments according to said second sub-instruction; and

control means interposed between said memory means and said counting means for selectively modifying said second sub-instruction for changing the counting increments of said counting means;

whereby the output of said counting means comprises a series of signal segments as defined by said memory means and said control means.

4,342,246

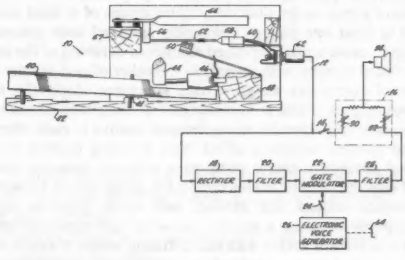
MULTIPLE VOICE ELECTRIC PIANO AND METHOD

Harold B. Rhodes, La Habra, and James B. Murphy, Costa Mesa, both of Calif., assignors to CBS Inc., New York, N.Y.

Filed Jun. 24, 1980, Ser. No. 162,487

Int. Cl.³ G10H *3/00*

U.S. Cl. 84—1.04 **21 Claims**



1. An electric piano comprising

a player actuated key,

a vibratory tine mounted to be struck and set into vibration in response to pressing of said key,

transducer means for sensing vibration of said tine and generating a piano voice signal,

means for converting said signal into sound,

means responsive to the vibration of said tine, as transduced by said transducer means, for generating a control signal having an amplitude envelope that corresponds to the amplitude envelope of said piano voice signal,

an auxiliary tone generator for generating an electronic tone signal,

modulator means responsive to said control signal generating means and to said auxiliary tone generator for impressing the amplitude envelope of said control signal upon said electronic tone signal to provide an amplitude modulated electronic tone signal,

said modulator means comprising clipping diode means connected to be responsive to said control signal and to said electronic tone signal for amplitude modulating said electronic tone signal in response to said control signal, an operational amplifier responsive to said control signal for overcoming the conduction threshold of said diode means,

and means for combining said modulated electronic tone

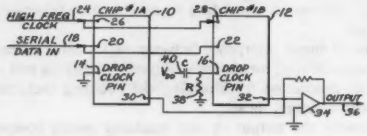
signal with said piano voice signal prior to conversion of said piano voice signal to sound.

4,342,247

PRODUCTION OF DETUNING EFFECTS IN AN ELECTRONIC MUSICAL INSTRUMENT

Anthony C. Ippolito, DeKalb, and William R. Hoskinson, Elburn, both of Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Aug. 28, 1980, Ser. No. 182,121
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.24 **10 Claims**



1. In an electronic musical instrument including a plurality of integrated circuit tone generator chips each including tone generator and detuning circuit means responsive to a predetermined detuning control signal for detuning the tones produced by said tone generator and wherein at least one pair of said integrated circuit tone generator chips are commonly assigned for the simultaneous production of the same tones, a celeste system comprising: detuning control circuit means including signal producing means for producing at least one predetermined detuning control signal and signal selection means for selectively applying said at least one predetermined detuning control signal to the detuning circuit means of at least one of said at least one pair of commonly assigned tone generator chips to cause a predetermined amount of detuning of the tones produced thereby with respect to the other of said at least one pair of commonly assigned tone generator chips, the tone signal outputs of said at least one pair of integrated circuit tone generator chips thereby being detuned relative to each other so as to produce a celeste effect, said detuning control circuit signal producing means comprising selected capacitor means and selected resistor means coupled in series circuit between a reference voltage and ground, said signal selection means selectively coupling a junction between said capacitor means and said resistor means with said detuning means of said at least one of said at least one pair of commonly assigned tone generator chips.

4,342,248

ORCHESTRA CHORUS IN AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, and Leslie J. Deutsch, Glendale, both of Calif., assignors to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

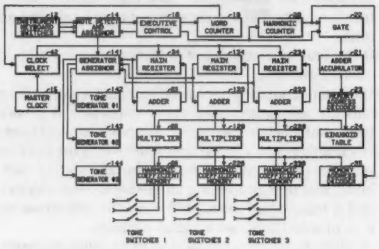
Filed Dec. 22, 1980, Ser. No. 218,884
Int. Cl.³ G10H *1/02, 1/22*
U.S. Cl. 84—1.24 **11 Claims**

1. In a musical instrument having a multiplicity of tone generators which are assigned to actuated keyswitches contained in a keyboard array of keyswitches, having keyswitches each operable in an unactuated or actuated keyswitch state, apparatus for creating an orchestra chorus wherein each assigned tone generator produces a designated audible musical tone color according to a tone priority logic that assigns a different tone color to each assigned tone generator comprising:

a plurality of waveshape generators each of which creates a musical waveshape and wherein said waveshape generators are designated by a generator index number j=1,2, . . . , M where M is the total number of the plurality of waveshape generators,

a note detection means for detecting the keyswitch states of keyswitches in said keyboard array of switches and wherein a new note signal is generated corresponding to each keyswitch whose keyswitch state changes from an unactuated to an actuated keyswitch state,

a plurality of tone generators each of which converts a musical waveshape created by said plurality of waveshape generators to an audible musical tone color, and



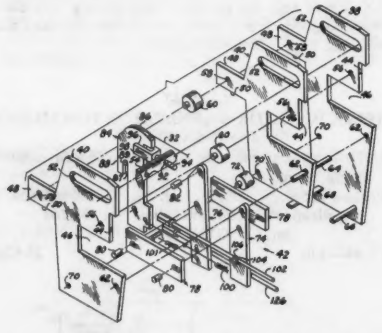
an assignor means responsive to said new note signal whereby each of said musical waveshapes created by said plurality of waveshape generators are transferred to said plurality of tone generators according to a tone priority logic thereby producing said orchestra chorus musical effest.

4,342,249

STRING MOUNTING PITCH CHANGING APPARATUS FOR A PEDAL STEEL GUITAR

Robert C. McCormick, and Tom H. McCormick, both of 1100 N. Union Bower, Irving, Tex. 75061

Filed Dec. 15, 1980, Ser. No. 217,343
Int. Cl.³ G10D *3/14*
U.S. Cl. 84—312 P **2 Claims**



1. In combination with a pedal steel guitar having a string secured at one end portion to a string tightening peg at the neck end of the guitar and having an opening in its other end, the improvement comprising:

plate assembly means including a plurality of pivotally interconnected levers extending vertically through the guitar opening for mounting and controlling the tension of said string, said plate assembly means including a displaceable puller arm having an arcuate surface over which the other end portion of said string passes,

a pair of end plates disposed in parallel spaced-apart relation transversely of said guitar,

a pair of inner plates interposed between said end plates in parallel spaced-apart relation,

a stop rod and a stop bar extending horizontally between said end plates, below said inner plates, in parallel spaced-apart relation,

a shaft extending transversely through said end plates and said inner plates in vertically spaced relation above said stop rod,

a raising lever interposed between said inner plates and pivotally connected at its upper end portion with said shaft for vertical swinging movement of its lower end portion toward and away from the guitar neck end,

a lowering lever interposed between said inner plates adjacent said raising lever and pivotally connected at its upper end portion with the depending end portion of said puller arm,

a generally horizontal link pivotally connected at its respective end portions with said raising lever and said lowering lever intermediate their ends, and,

spring means normally biasing the depending end portion of said puller arm toward the guitar neck end and normally biasing the depending end portion of said raising lever and said lowering lever toward said stop rod and said stop bar, respectively;

means for securing the string to said puller arm;

means for displacing said puller arm in predetermined directions to selectively vary the tension of said string,

said displacing means including at least one axially movable elongated rod,

a pedal actuated pivotable activator,

a clip securing at least one said movable rod to said raising lever and said lowering lever, respectively, and,

a ferrule surrounding the respective said movable rod and contacting said clip in response to axial movement of said movable rod in one direction;

means for selectively coupling said rod and said activator for selectively controlling displacement of said puller arm in a predetermined direction of predetermined magnitude by axial movement of said movable rod and consequently the tone of said string; and,

harmonic string tuning means transversely supported by said end plates and said inner plates including a pivot pin projecting transversely through and pivotally supporting said puller arm during its displacement in said predetermined directions,

said end plates and said inner plates each being provided with a horizontal slot in their upper end portions in cooperative horizontally aligned relation transversely of said guitar,

said harmonic tuning means further including a tuning bar extending through the horizontal slots,

a yoke having transversely apertured legs straddling an intermediate portion of said puller arm for receiving said pivot pin, and,

a harmonic adjusting screw threadedly extending through said tuning bar and abutting said yoke for discrete displacement of said puller arm in said predetermined directions.

4,342,250

HARMONICA

Frederick B. Robjent, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 22, 1980, Ser. No. 114,258

Int. Cl.³ G10D *7/12*

U.S. Cl. 84—377 **8 Claims**

1. A harmonica comprising:

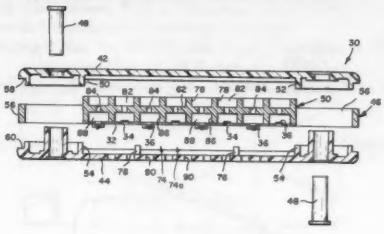
first, second and third members cooperating to form a housing, said first and second members forming outer walls of said housing and said third member dividing said housing into first and second chambers;

a plurality of first passages extending through said first member from the exterior of said housing into said first chamber;

a plurality of second passages through said second member from said second chamber to the exterior of said housing;

a reed plate having a plurality of reeds attached thereto disposed within said second chamber;

a plurality of third passages through said third member, from said first chamber to said second chamber, said second and third passages characterized by a size and shape effective



to block the passage of a reed out of said second chamber in the event a reed becomes separated from said plate.

4,342,251

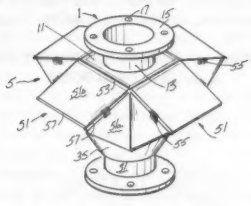
ANTI-DETONATION POWDER SAFETY DEVICE

Richard W. Wahlfeldt, El Paso, Tex., and David R. Field, St. Marks, Fla., assignors to Olin Corporation, Stamford, Conn.

Filed Mar. 3, 1980, Ser. No. 126,232

Int. Cl.³ C06B *21/00;* **F42B** *33/00*

U.S. Cl. 86—1 R **14 Claims**



1. A safety device for preventing detonation of a quantity of powder in a bulk handling system, said device comprising:

an inlet member;

an outlet member in spaced relation to said inlet member and concentric therewith;

a plurality of box-like, open-ended body members serially interconnected and symmetrically disposed between said inlet and outlet members and defining therebetween a central chamber and a plurality of wing chambers communicating therewith, said wing chambers provided with openings having a total surface area sufficient to allow non-detonative escape of gaseous combustion products from ignition of powder to be contained therein, each of said body members including at least one wall member, normally closing said opening, and pressure responsive means for allowing said at least one wall member to open in response to a predetermined pressure increase in any of said chambers whereby said chambers and conveying member may be vented to the atmosphere.

4,342,252

TANDEM ROCKET LAUNCHER

Allen C. Hagelberg, Diamond Bar, and Clark E. Allardt, Claremont, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Mar. 25, 1980, Ser. No. 133,756

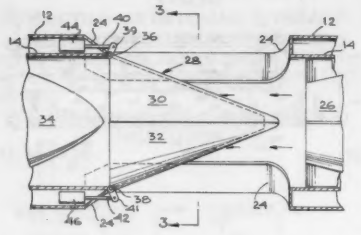
Int. Cl.³ F42C *15/06*

U.S. Cl. 89—1.812 **8 Claims**

1. A tandem rocket launcher comprising:

a cylindrical launch tube with forward and rearward rocket positioning means for plural axially aligned rockets;

rocket exhaust gas escape means mounted between said forward and rearward positioning means; and



conical exhaust gas deflection means positioned adjacent said escape means effective to prevent impingement of forward rocket launching exhaust gases upon rearward rockets, said deflection means being removable from the path of a rearward rocket subsequent to firing of a forward rocket.

4,342,253

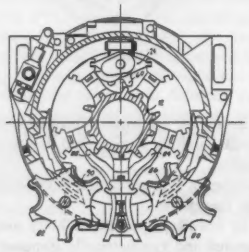
SPROCKET ARRANGEMENT IN A HIGH RATE OF FIRE REVOLVING BATTERY GUN

Robert G. Kirkpatrick, Shelburne, and Stephen A. Jarvis, Colchester, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Apr. 7, 1980, Ser. No. 137,704

Int. Cl.³ F41D *10/30*

U.S. Cl. 89—12 **3 Claims**



1. A gun including:

a housing having a main cam and a longitudinal axis;

a rotor, having a plurality of gun barrels disposed in an annular row about said axis, and a like plurality of gun bolts disposed in an annular row about said axis, and journaled for rotation in said housing about said axis;

each of said gun bolts having a cam follower engaged with said main cam whereby as said rotor and said row of barrels and said row of gun bolts rotate about said axis, said main cam drives each of said gun bolts in sequence longitudinally to and between an aft dwell position and a forward dwell position;

sprocket means journaled for rotation in synchronism with said rotor for handing a round of ammunition with its base onto the face of each of said gun bolts in sequence as the respective gun bolt passes through its respective rear dwell position,

means interrelating said sprocket means and said main cam so that each of said gun bolts is in its respective rear dwell position as the base of the respective round of ammunition is initially handed transversely onto said face of said gun bolt, but not coaxial with said gun bolt, and subsequently said gun bolt, as said rotor rotates about said axis, proceeds to move longitudinally forwardly while the round, as said sprocket rotates, continues to move transversely along the face of said gun bolt to a disposition whereat the round is coaxial with said gun bolt.

4,342,254

CIRCUIT FOR HYDROSTATICALLY OPERABLE DEVICES

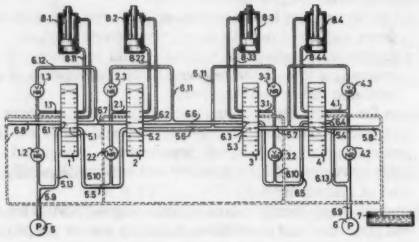
Udo Reinecke, Dortmund-Kirchhörde, and Jürgen Gerber, Ergste, both of Fed. Rep. of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 880,839, Feb. 23, 1978, abandoned, which is a continuation of Ser. No. 671,157, Mar. 29, 1976, abandoned, which is a continuation of Ser. No. 535,824, Dec. 23, 1974, abandoned. This application Mar. 31, 1980, Ser. No. 136,084

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1973, 2364282

Int. Cl.³ F01B *25/02*; F15B *11/00*

U.S. Cl. 91—6 **1 Claim**



1. A hydraulic system for actuation of working devices on construction machines including lifting and lowering movements of excavating scoops with which a plurality of hydraulic devices are operated by fluid pressure delivered by fluid flow from a hydraulic tank by two pumps, each hydraulic device being operable by pressure from both pumps or each of any two devices being operable independently by pressure from one of said pumps, said system comprising in combination two hydraulic circuits having opposite ends including discharge ends as well as fluid circulating passages thereto and having two pumps connected to opposite ends of said hydraulic circuits to provide fluid flow from the tank under pressure through circulating passages to the discharge ends at the opposite ends of said hydraulic circuits, said two pumps including a first pump connected to one end of one hydraulic circuit and a second pump connected to the opposite end of the other hydraulic circuit to produce fluid flow in opposite directions through circulating passages in said hydraulic circuits to discharge outlets at the ends of said hydraulic circuits, a plurality of hydraulic devices operable by fluid pressure connected in parallel to said fluid circulating passages to receive fluid pressure from said passages, and conduits connecting both said circulating passages to each of said hydraulic devices to receive fluid pressure from said circulating passages, so that each hydraulic device may be operated by fluid under pressure from the two circulating passages, each hydraulic device being connected to two fluid circulating passages through check valves each having a pressure connection therewith and which allow passage of fluid to said hydraulic device to operate said device, a plurality of control valve devices, each of which controls the connection of one of said hydraulic devices to said fluid circulating passages for the flow through the conduit to one of said hydraulic devices and is movable from neutral position to actuating position to connect the corresponding hydraulic device through its conduit to said fluid circulating

passages, each control valve device having fluid circulating passages for fluid flow through said circuits when said control valve device is in neutral position, so that said fluid circulating passages are continuous from the pumps to the discharge ends when all control valve devices are in neutral position, each control valve device when moved to actuating position connecting the two circulating passages to the corresponding hydraulic device through its conduit to operate said hydraulic device corresponding therewith, each control valve device in actuating position closing the two circulating passages through said hydraulic circuits, so that the circulating passage on the downstream side of the control valve device is blocked by the control valve device in actuating position, and the hydraulic devices on the downstream side of said control valve device receive no fluid pressure from that hydraulic circuit, and the movement of any two control valve devices to their actuating positions serving to connect each of the corresponding hydraulic devices to one of said circulating passages, said first and second pumps each having fluid flow discharging to the hydraulic tank after flowing through said check valves so that fluid flow in the operatively ineffective position occurs through two conduits or circulating passages capable of being closed off by said control valve device therewith in operatively effective position, each conduit having fluid flow therethrough amounting to capacity and conveying quantity of one pump associated therewith permanently in a relationship oppositely with respect to the relationship to the feed conveying direction of the other pump, each conduit under consideration upstream of each control valve device having a conduit branching to the pressure connection of the check valve open toward the control valve device associated therewith.

4,342,255

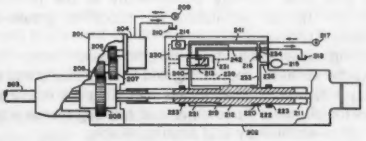
OSCILLATOR ACTUATED HYDRAULIC IMPULSE DEVICE

Takeo Watanabe, Yokohama, and Makoto Matsuda, Tokyo, both of Japan, assignors to Mitsui Engineering and Shipbuilding Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 11,438, Feb. 12, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,139

Int. Cl.³ F15B *21/02*; F01L *25/04, 21/02*

U.S. Cl. 91—40 **6 Claims**



1. An oscillator actuated hydraulic impulse device of the type including a spool valve actuated by an alternating signal from an oscillator to switch the hydraulic pressure in a double-acting cylinder in order to cause reciprocating motion of a piston which strikes a boring tool and the frequency of the oscillator is independent of the movement or position of the piston, said hydraulic impulse device being characterized by:

a rear end port provided in a rear chamber of said cylinder;

an accumulator coupled to said rear end port;

a flow line coupling said rear end port to a source of hydraulic fluid;

a check valve provided in said flow line;

a plurality of mid-point ports for controlling a transistion of said piston from an impulse stroke to a return stroke provided in said rear chamber further toward the midpoint of said cylinder than said rear end port which are opened and closed by movement of said piston; and

a further flow line coupling said plurality of mid-point ports to said spool valve.

4,342,256

CONTROL DEVICE FOR A HYDRAULIC MOTOR

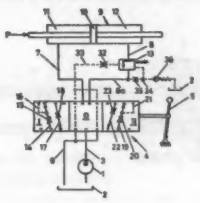
Hans S. Andersen, Augustenborg; Helge K. Christensen, and Preben Christiansen, both of Nordborg, all of Denmark, assignors to Danfoss, A/S, Nordborg, Denmark

Continuation of Ser. No. 833,877, Sep. 16, 1977, abandoned. This application May 22, 1979, Ser. No. 41,392

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1976, 2642337

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—420 **3 Claims**



1. A hydraulic motor assembly, comprising a motor having a piston forming first and second expansible chambers on opposite sides thereof, first and second ports respectively for said chambers, supply and return lines, a control valve between said lines and said motor, said control valve having first position supply and exhaust passages for respective fluid communication with said first and second motor ports and second position supply and exhaust passages for respective fluid communication with said second and first motor ports, said control valve first position exhaust passage being a throttle passage with a set throttle resistance for restricting the flow of fluid therethrough, a brake valve between said second motor port and said control valve, said brake valve having first and second through-flow ports respectively on the control valve and motor sides of said brake valve, said brake valve having first and second pressure chambers, piston means having first and second connected heads respectively in said pressure chambers and being separated by connection means to provide fluid flow passage means between said through-flow ports and between said heads, said piston means being bistable in valve opening and closing directions relative to said through-flow ports in respective response to oppositely acting pressures in said first and second pressure chambers, said second head being in valve throttling relation to said first through-flow port, means biasing said brake valve toward a position of said second head blocking said first through-flow port, scanning contrl port means for said brake valve having fluid communication with said first pressure chamber thereof for sensing supply pressure downstream of said supply passage of said control valve for said first position of said control valve, fluid connecting means between said first brake valve through port and said second brake valve pressure chamber, the pressure at said first brake valve through-port and in said second brake valve chamber thereby being directly responsive to the rate of fluid flow through said brake valve due to the fluid flow restrictive action of said first position exhaust throttle passage when said control valve is in its first position, said fluid flow restrictive action being sufficient to significantly affect the pressure in said second brake valve chamber to increase the valve closing force thereof upon in increase in the rate of fluid flowing through said brake valve.

4,342,257

ROTARY ACTUATOR WITH INTEGRAL FLUID COUPLING JOINT

Paul P. Weyer, 48811 284th SE., Enumclaw, Wash. 98022

Filed Apr. 28, 1980, Ser. No. 144,196

Int. Cl.³ F01B *3/00*

U.S. Cl. 92—31 **4 Claims**

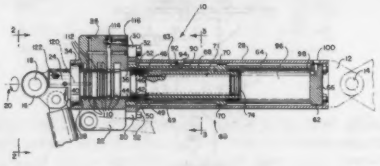
1. In a boom assembly having a rotary actuator for rotating

a fluid operated tool or other device and an integral rotary fluid coupling for said actuator, comprising:

an actuator housing fastened to one of said boom or tool and having an axial bore formed therein, an output shaft of said rotary actuator fastened to the other of said boom or tool and rotatably mounted within said bore;

drive means coupled to said shaft within said housing for rotating said shaft to rotate said tool relative to said boom;

said housing including a combined fluid slip coupling and shaft bearing mount having a plurality of sealed fluid chambers formed between said actuator housing and said rotatable output shaft, said fluid slip coupling and bearing



mount also including shaft bearings for axially and radially supporting the output shaft in said housing, said bearings being located on opposite sides of said sealed fluid chambers;

first fluid ports formed in said slip coupling and bearing mount for connection to said fluid chambers and adapted to be connected to a fluid pressure source;

second fluid ports formed in said output shaft for connection to said chambers and adapted to be connected to a fluid operated device connected to said shaft whereby the fluid operated device is provided with fluid without twisting of fluid lines.

4,342,258

VENTILATOR

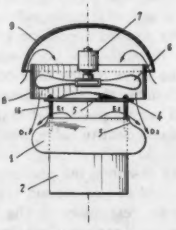
Michel H. Zaniewski, Avenue Ferdinand de Lesseps, 34110 Frontignan, France

Filed Jun. 16, 1980, Ser. No. 159,653

Claims priority, application France, Jun. 18, 1979, 79 16182

Int. Cl.³ F23L *17/02*

U.S. Cl. 98—78 **6 Claims**



1. A ventilator for use in combination with a conduit having an upwardly open mouth of predetermined shape and flow cross section, said ventilator comprising:

a generally toroidal annular flow body surrounding said conduit immediately below said mouth and having an outer wall having a lower portion spaced outwardly from said conduit and an outwardly concave and curved upper portion extending upward and inward from said lower portion to said conduit and merging with said conduit substantially at said mouth; and

means including

a horizontal deflector disk suspended above said mouth and fixed adjacent said body, said disk having an outer periphery extending outwardly beyond said mouth and defining with said mouth an annular gap having a flow cross section greater than that of said mouth, and

a fan including a drive motor fixed above said disk, an axial-throughput impeller rotatable about an upright axis by said drive motor and extending radially horizontally beyond said disk, a sleeve closely surrounding said impeller and centered on said axis, and

a cover spacedly fixed above said sleeve for generating an air stream that moves downwardly around said periphery of said disk and across said gap for inducing air flow over said body and thereby creating a low-pressure zone at said mouth.

4,342,259

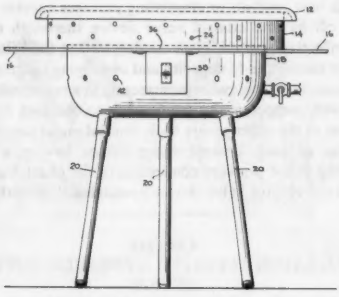
COOKING GRILL

John C. Lee, 4917 Genesta St., Encino, Calif. 91316

Continuation of Ser. No. 133,620, Mar. 3, 1980, abandoned. This application Apr. 9, 1981, Ser. No. 252,395

Int. Cl.³ A47J *37/10, 27/00*

U.S. Cl. 99—425 **7 Claims**



1. A grill comprising:

(a) a solid grill plate including grooves evenly spaced across the top surface of said grill plate for retaining grease and liquid to burn and flavor food cooked thereupon;

said grooves being from 1/16″ to 3/16″ wide, 1/16″ to 3/16″ deep and positioned from ¾″ to 1″ apart;

said grill plate curving downwardly at the perimeter portion thereof facilitating the runoff of grease and liquid therefrom;

(b) heating means for heating said grill plate;

(c) housing means for supporting said heating means and said grill plate, said housing means including air intake passages for allowing air to enter said housing means where said air is warmed by said heating means;

(d) said housing means comprises a one-piece steel bowl;

(e) collar means supported by said housing means for supporting said grill plate, said collar means including means for defining air intake passages for allowing cool air to pass and mix with said air warmed by said heating means to cool said warmed air; said collar means being displaced from said housing means to provide an air egress passage for allowing the cool air to be exhausted; and

(f) base means for supporting said housing means.

4,342,260

APPARATUS FOR PRINTING FABRICS WITH A SCREEN PRINTING PROCESS

Enrico Sala, Via Emilia Ovest, 57, Fidenza (Parma), and Rino Ricchetti, Via Lisoni, 6, Parma, both of Italy

Filed Sep. 4, 1980, Ser. No. 184,012

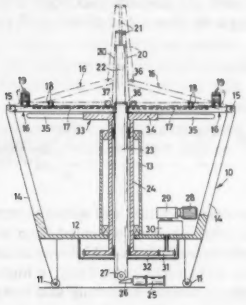
Claims priority, application Italy, Sep. 7, 1979, 25545 A/79

Int. Cl.³ B05C *17/06, 17/04*

U.S. Cl. 101—126 **2 Claims**

1. In an automatic apparatus for printing fabrics, particularly

finished garments, of the type provided with a plurality of printing screens which are lowered and raised with respect to a rotatable garment support member, the improvement comprising a substantially horizontal base member bounded by a peripheral outer region, support arms extending upwardly from the outer peripheral region of said base member, a hollow cylindrical column extending substantially vertically upwardly from the central region of said base member, a tubular outer shaft extending through said column and rotatably supported coaxially therein, a polygonal radial flange mounted at the top of said outer shaft, forms for mounting the garments to be printed removably supported on and radially extending from edges of said flange means at the lower end of said outer shaft to rotate said outer shaft in predetermined stepwise fashion to move said forms between successive printing positions, a plurality of printing screens radially oriented relative to said outer shaft and pivotally mounted at their outermost ends to the upper ends of said support arms and extending radially inwardly therefrom to overly said forms in the printing position,



an inner shaft coaxially supported within said outer shaft for relative axial movement with respect thereto and extending through the lower end and through said flange at the upper end thereof, cam means mounted on said base member operably engaging the lower end of said inner shaft to raise and lower it a predetermined amount, a hydrodynamic piston and cylinder means mounted on the upper end of said inner shaft and extending coaxially upwardly therefrom, a piston rod attachwed to said piston and extending upwardly, flexible cable members each connected at one end to an upper end of said piston rod and at the other end to a respective one of said printing screens, said inner shaft and said piston and cylinder means operating cooperatively so that raising of said inner shaft by said cam means raises said printing screens simultaneously from the printing position an incremental amount to allow rotation of said forms between said successive printing positions, and extension of said piston rod raises said printing screens a substantially greater amount about their outer pivoted ends to allow access to said screens for replacement thereof and for servicing the apparatus.

4,342,261

SHAPED CHARGE WARHEAD WITH MECHANICAL MEANS FOR PREVENTING ROTATION

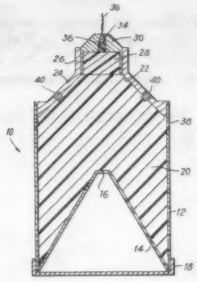
John N. Majerus, Rising Sun, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 23, 1980, Ser. No. 161,710
Int. Cl.³ F42B *1/02*
U.S. Cl. 102—307 **9 Claims**

1. A shaped-charge warhead comprising:

a generally cylindrical casing having an open rear end and a forward end closed by a generally conical liner;

a solidified mass of explosive material in said casing in contact with said casing and said liner; and



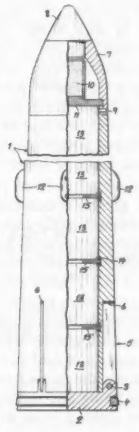
mechanical means for preventing rotation of said mass of explosive material in said casing.

4,342,262

CARRIER MISSILE FOR EJECTABLE BODIES

Rudolf Romer, Kaarst; Rolf Hellwig, and Dietmar Karius, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 22, 1977, Ser. No. 772,550
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1976, 2607336
Int. Cl.³ F42B *13/50*
U.S. Cl. 102—489 **7 Claims**



1. A carrier missile for ejectable bodies such as satellite missiles, mines and the like, adapted to be launched from a barrel, comprising a split missile envelope provided with a bottom and a head, designed to receive several aligned bodies, resting against partitions, which upon traverse of a certain flight path are released by the castoff of the missile head and the flipping-open of the missile envelope, said missile envelope being formed from half-shells and hingedly connected with the missile bottom, with a cylindrical interior and with an exterior converging conically toward the missile point, whose inner wall is provided with spaced-apart annular grooves receiving several partitions, individually supporting the bodies to be ejected, which in turn engage with their ends in the annular grooves in such a way that upon launching they clamp the half-shells of the missile envelope together but release them upon the ejection of the bodies.

4,342,263

RAILWAY WORK-SITE MACHINE EQUIPPED WITH A MECHANICAL UNIT FOR DISPLACEMENT OF THE TRACK

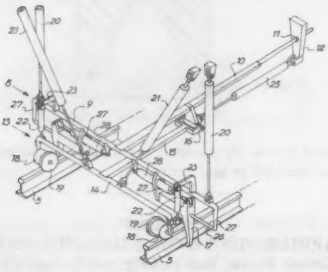
Hans Hurni, Ecublens, Switzerland, assignor to Sig Societe Industrielle Suisse, Chutes du Rhin, Switzerland

Filed Nov. 19, 1980, Ser. No. 208,134

Claims priority, application Switzerland, Dec. 19, 1979, 11293/79

Int. Cl.[3] E01B *33/06, 33/21*

U.S. Cl. 104—7 B 6 Claims



1. In a railway work-site machine having a chassis and a track displacing mechanical unit articulated in all azimuths and connected to said chassis by lifting, shifting and longitudinal displacement jacks, which unit comprises a shifting roller wheel with inner flange and an outer lifting hook mounted in opposition to each other on opposite sides of each line of rails for the guiding thereof on the track and for the grasping of the rails and means for adjusting the height and track respective transverse position of each lifting hook with respect to the roller wheel associated therewith, the improvement of the track displacing mechanical unit being composed of a hook support comprising a transverse girder on the two ends of which the two lifting hooks are mounted movable and adjustable transversely to the track and of a roller wheel support comprising a transverse girder parallel to the hook support girder and on the two ends of which the two shifting flanged roller wheels are mounted in fixed position, wherein one of said two transverse girders is connected to the chassis of the machine by a full-azimuth articulation device comprising at least one longitudinal displacement jack, said girder having a pivot on which is articulated and pivotally mounted in a plane perpendicular to said two girders at least one connecting arm to which is fastened the other girder, wherein the lifting jacks are connected to the lifting hook support and the shifting jacks are connected to the shifting roller wheel support, and wherein the two transverse girders of said two supports are connected by at least one jack for the adjustment of their height difference, whereby each lifting and shifting action passes directly from the lifting and shifting jacks to the hooks and flanged roller wheels.

4,342,264

CONVERTIBLE RAIL-HIGHWAY SEMI-TRAILER FLUID SUSPENSION

Eugene Hindin, Bala Cynwyd, Pa.; Alan R. Cripe, and Christopher A. Cripe, both of Richmond, Va., assignors to Bi-Modal Corporation, Greenwich, Conn.

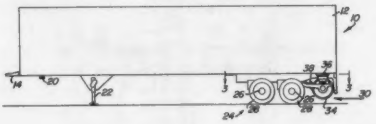
Filed Feb. 28, 1980, Ser. No. 125,505

Int. Cl.[3] B60F *1/04;* B61D *3/00;* B61F *13/00;* B62D *61/12*

U.S. Cl. 105—215 C 12 Claims

1. In a vehicle having a wheel-set axle unit, an air spring suspension for the wheel-set axle unit comprising a load support member mounted to the axle and including a vertical bore, an air chamber member secured to the underside of the vehicle frame, and invaginating air bag clamped between said load support and air chamber member, a vertical shaft slidable in said vertical bore, a plate fixed to the upper end of said shaft, spring means normally urging said shaft and plate upwardly towards the vehicle frame to a vehicle supporting position, and pneumatically operable means holding said shaft in said support position and retractable to a release position which allows retraction of said shaft when air is vented from said air bag.

2. In a vehicle having a wheel-set axle unit, an air spring suspension for the wheel-set axle unit comprising a load support member mounted to the axle and including a vertical bore, an air chamber member secured to the underside of the vehicle frame, an invaginating air bag clamped between said load support and air chamber member, a vertical shaft slidable in said vertical bore, a plate fixed to the upper end of said shaft, spring means normally urging said shaft and plate upwardly towards the vehicle frame to a vehicle supporting position, and pneumatically operable means holding said shaft in said support position and retractable to a release position which allows retraction of said shaft when air is vented from said air bag wherein said pneumatically operable means includes a horizontal bore in said load support member opening into said vertical bore, a support stop pin slidable in said horizontal bore, spring means urging said pin towards said vertical bore so that its inner end engages the lower end of said shaft and supports the



same in its uppermost position and means to retract said pin to said release position when air is vented from said air bag.

8. In a vehicle convertible from highway to railroad mode of travel and vice versa including a body, a highway wheel-set axle unit, air spring means supporting said body on said highway wheel-set unit, a rail wheel-set axle unit and air spring means supporting said body on said rail wheel-set axle unit; said rail wheel-set axle unit air spring means comprising a load support member mounted to the axle including a vertical bore and a horizontal bore communicating therewith, an air chamber member secured to the underside of the body, an invaginating air bag clamped between said air chamber and said load support member, a vertical shaft slidable in said vertical bore and including a plate fixed to the upper end thereof, spring means urging said shaft and plate upwardly towards said body, a supporting stop pin slidable in said horizontal bore, spring means urging said pin towards said vertical bore and in position to have its inner end engage the lower end of said support said shaft, an airstroke cylinder and a pivoted lever operative by said airstroke cylinder and engaging said support pin whereby depressuring said air bag will simultaneously increase the air pressure in said air stroke cylinder and cause said lever to retract said pin until its inner end clears the lower end of said shaft.

4,342,265

CONVERTIBLE RAIL-HIGHWAY SEMI-TRAILER AXLE LIFTING AND RETAINING MECHANISM

Eugene Hindin, Bala Cynwyd, Pa.; Alan R. Cripe, and Christopher A. Cripe, both of Richmond, Va., assignors to Bi-Modal Corp., Greenwich, Conn.

Filed Feb. 28, 1980, Ser. No. 125,507

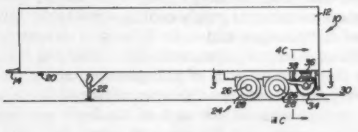
Int. Cl.[3] B60F *1/04;* B61D *3/00;* B61F *13/00;* B62D *6/12*

U.S. Cl. 105—215 C 13 Claims

1. In a convertible rail-highway semi-trailer including a body, a rail wheel-set axle unit and air spring means supporting the body, a highway wheel-set axle unit and air spring means supporting the body on the highway wheel-set axle unit independently of the rail wheel-set axle unit; a mechanism for lifting and retaining the rail wheel-set axle unit in the elevated stored position in a highway mode when the highway wheels

engage the ground and to release said rail wheel-set axle unit upon conversion from the highway mode to a rail mode, said mechanism comprising at least one hook member, means rotatably mounting said hook member to the underside of the body for movement into and out of engagement with a part of the rail wheel-set axle unit, actuating means operatively connected to said hook member causing engagement of said hook member with said rail wheel-set axle unit in response to a deflation of the rail air spring means and selectively to release said engagement in response to an inflation of said rail air spring means and means to prevent air from inflating said rail air spring means while said hook member is engaged with said rail wheel-set axle unit.

5. In a convertible rail-highway semi-trailer including a body, a rail wheel-set axle unit and air spring means supporting the body, a highway wheel-set axle unit and air spring means supporting the body on the highway wheel-set axle unit independently of the rail wheel-set axle unit; a mechanism for lifting and retaining the rail wheel-set axle unit in the elevated stored position in a highway mode when the highway wheels engage the ground and to release said rail wheel-set axle unit upon conversion from a highway mode to a rail mode, said mechanism comprising at least one hook member, means rotatably mounting said hook member to the underside of the body for movement into and out of engagement with a part of the rail wheel-set axle unit, and actuating means operatively connected to said hook member causing engagement of said hook member with said rail wheel-set axle unit in response to a



deflation of the rail air spring means and selectively to release said engagement in response to an inflation of said rail air spring means, said actuating means including an air cylinder, a piston rod operatively connecting said cylinder to said hook member, means selectively admitting and removing air from said cylinder whereby removal of air from said cylinder causes said piston to pull said hook member into engagement with said rail wheel-set axle unit and admission of air to said cylinder causes said piston rod to push said hook member out of engagement with said rail wheel-set axle unit, said means selectively admitting and removing air from said cylinder including a valve operatively connected to said chamber and means opening and closing said valve in response to the distance between the body and the rail wheel-set axle unit.

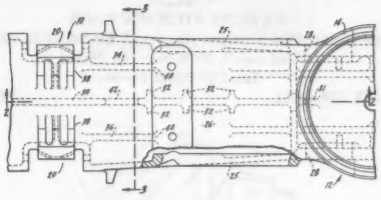
9. In a vehicle having a body, a wheel-set axle unit and air bags supporting said body; a mechanism for lifting and retaining said wheel-set axle unit in an elevated stored position when said air bags are deflated comprising at least one hook member, means rotatably mounting said hook member to the underside of said body and engageable with a part of said wheel-set axle unit, an air cylinder, a piston rod interconnecting said cylinder and said hook member, a valve operatively connected to said cylinder and means responsive to the distance between said body and said wheel-set axle unit causing said valve to selectively open and close to admit air into and remove air from said cylinder and thereby pull said piston rod and hook member into an engaged lifting and retaining position and push said piston and hook member into a retracted position.

4,342,266

RAILROAD CAR TRUCK BOLSTER

Donald B. Cooley, Wheaton, Ill., assignor to Standard Car Truck Co., Park Ridge, Ill.

Filed Jul. 28, 1980, Ser. No. 172,559
Int. Cl.³ B61F *5/04, 5/12, 5/50*
U.S. Cl. 105—226 **2 Claims**



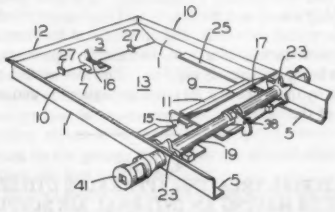
1. A bolster for use in a railroad car truck including spring seat areas at outer ends and a generally central section intermediate spring seat areas and of substantially greater vertical dimension than the spring seat areas, each of said spring seat areas including a pair of pockets positioned on opposite sides of the bolster for positioning a dampening wedge, a vertical reinforcing rib extending from the central section into the spring seat areas, the central section having slanted bottom walls which merge with bottom walls of the spring seat areas, the spring seat areas and central section being subject to loading in opposite vertical directions thereby creating areas of localized bending stress at the spring seat junction of the bottom walls and central section slanted bottom walls, the improvement comprising means for reducing such localized bending stress including separate ribs on each side of said vertical reinforcing rib and generally equally spaced therefrom, said separate ribs beginning generally inboard of a bolster wedge pocket and extending toward and terminating substantially short of the central section of said bolster, and an opening in said vertical reinforcing rib extending longitudinally through a portion of said vertical reinforcing rib, from the central section and terminating short of ends of said separate ribs.

4,342,267

HOPPER DISCHARGE UNIT WITH SLIDING GATE

Bennett O. Blout, Berwyn, Ill., assignor to Evans Products Company, Portland, Oreg.

Filed Aug. 13, 1980, Ser. No. 177,816
Int. Cl.³ B61D *7/20, 7/22, 7/26*
U.S. Cl. 105—282 P **20 Claims**



1. A hopper discharge unit having spaced side and front and rear walls defining a rectangular outlet opening, a rectangular gate member comprising a uniformly flat plate sidably mounted in said opening for movement from a closed position blocking said opening to an open position clear of said opening and having longitudinally aligned uniformly spaced perforations in its side margins forming toothed racks wholly co-pla-

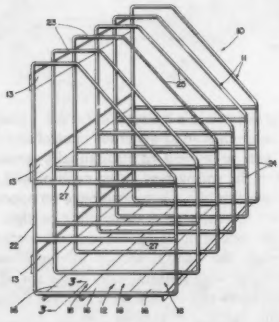
nar with said flat plate, an operating shaft journaled in said side walls rearwardly of said opening above said gate member and having pinions mounted on its end portions adjacent to said side walls and meshing with said perforations to cause movement of said gate member between closed and open positions responsive to rotation of said shaft.

4,342,268

VERTICAL STORAGE RACK

Alfred Grava, 1616 Sheridan Rd., South Euclid, Ohio 44121

Filed Jul. 9, 1979, Ser. No. 56,141
Int. Cl.³ B65D *19/44*
U.S. Cl. 108—55.1 **7 Claims**



1. A vertical storage system for sheet stock comprising a base and a plurality of laterally spaced separators fixed to and extending upright from the base, the base and separators defining a front, bottom, back, top and sides of the system, the base being formed of a set of inverted metal channels extending longitudinally continuously from one side of the system to the other in the mid-zone between the front and back, a web of each channel being in a common plane and collectively forming a support surface for sheet stock being slid thereon for loading, unloading or storage in the system, the separators being of substantially identical construction, each separator being formed of metal bar stock, the metal bar stock of a separator being fabricated into a generally planar network including a polygonal perimeter portion extending across the top and front of the system, a bottom of the perimeter portion being supported directly on the support surface, means extending across the back of the system tying adjacent separators together, the space between adjacent separators defining sheet receiving compartments, the compartments above the base and forward of the rack being substantially free of obstruction whereby sheet stock may be inserted and withdrawn from the front and top of each compartment and such stock abutting said tying means and resting on said base may extend from said compartments forwardly and upwardly of the front and top of the system during storage, said channels, separators, and tying means being sufficiently rigid to permit said system to be transported by the forks of a lift truck engaging the underside of the webs of the channels.

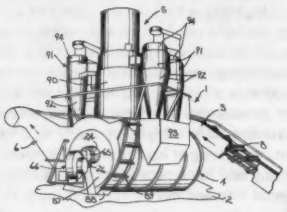
4,342,269

MATERIAL TREATING APPARATUS UTILIZING AN AUGER HAVING AN INTERNAL AIR SUPPLY AND HEAT TRANSFER SYSTEM

Gordon H. Hoskinson, 186 Mayfair Rd., Floral Park, N.Y. 11001

Filed Nov. 17, 1980, Ser. No. 207,666
Int. Cl.³ F23G *3/00*
U.S. Cl. 110—257 **13 Claims**

12. An incinerator, comprising a housing defining a combustion chamber, an auger mounted for rotation within the housing, feeding means for feeding waste to a first end of said combustion chamber, discharge means for discharging ash and non-combustible residue from the opposite end of the combustion chamber, said auger serving to convey the waste material in a downstream direction from the first end to the opposite end of the combustion chamber, said auger comprising a tubular shaft and a hollow spiral flight carried by the shaft and extending substantially the entire length of said combustion chamber, a tubular manifold spaced outwardly of the downstream end of the shaft, the downstream end of said flight being connected to the manifold and spaced radially outward from the shaft to provide a passage that provides communication between the manifold and an interior chamber in said flight, air supply means supplying air to the manifold, said air passing through said passage and into said interior chamber, said flight



includes an upstream wall section and a downstream wall section that are spaced apart to define said interior chamber, said upstream wall section having a plurality of air discharge ports for discharging air from said interior chamber into said combustion chamber, each wall section including a pair of spaced wall panels defining a plurality of radially spaced cooling passages, means to supply cooling water to the downstream end of said passages, said water flowing in an upstream direction through said passages, means for discharging heated water from the upstream ends of said passages, and a plurality of external ribs mounted on the outer surface of the downstream wall section adjacent the apex of the flight and located between said ports, said ribs acting to agitate the waste material and prevent clogging of said ports.

4,342,270

DIGGING AND PLANTING MACHINE

Stig-Gunnar Lofgren, Jarved, and Bo G. Ekeborg, Bonassund, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed May 18, 1981, Ser. No. 264,992
Claims priority, application Sweden, Jun. 25, 1980, 8004686
Int. Cl.³ A01C *11/00*
U.S. Cl. 111—1 **23 Claims**

1. A digging and planting machine for digging holes and planting plants therein while automatically maintaining a predetermined plant density per unit of planted area, comprising, in combination, a vehicle, and, carried on the vehicle, a tubular digging and planting tool; at least one sensing and signalling means for sensing a resistance below and/or exceeding a predetermined value to penetration of the ground by the digging tip of the tool, thus gauging the condition of the ground, and detecting obstacles to such penetration so as to ensure that the digging tip provides and a plant is fed to a planting hole of the desired depth, and a digging attempt is aborted if this be impossible, and comprising an elongated member movable towards

and away from the ground in a selected location where a planting hole is to be dug; means biasing the elongated member resiliently towards the ground with a force opposed by the force resisting penetration of the member into the ground, the biasing force being insufficient to prevent movement of the member against the biasing force at a resisting force above a predetermined minimum; drive control means operatively connected to the digging and planting tool to initiate and carry out a normal cyclic digging and planting operation; and, in response to a drive signal, raising and lowering the digging and planting tool towards and away from the ground, and, in response to an abort signal, aborting that digging attempt and causing the digging and planting tool to continue to make hole-digging attempts until a hole of the desired depth has been dug; at least one drive signalling means for sending a drive signal to the drive control means; at least one abort signalling means for sending an abort signal to the drive control means; and at least one abort signal actuating means operatively associated with the elongated member and responding to a predetermined movement of the elongated member as a function of the penetrability of the ground, due to the condition of the ground at that location, by actuating the abort signalling means to give an abort signal to the drive control means indicating that the elongated member has detected a resisting force above the predetermined minimum showing the digging tip cannot provide a planting hole of the desired depth; at least one sensing and signalling means sensing when a hole of selected depth has been dug, and a plant planted therein; and sending a go-ahead signal to a second measuring means, and to a signal receiving circuit; first measuring said signalling means detecting and measuring sequential unit distances of travel of the vehicle as it moves across the ground, said distances corresponding to a selected spacing between adjacent plants, and for each travelled unit distance sending a first signal to a signal receiving circuit and automatically returning to an initial position; second measuring means detecting and measuring the said unit distances and generating a second signal before the end of said unit distances, said second measuring means responding to said go-ahead signal by returning to an initial position; a signal receiving circuit including a switch means movable between circuit-open and circuit-closed positions, receiving and counting the first signals and the go-ahead signals, and comparing the count of the first signals and go-ahead signals by subtraction to determine the difference between the count of the first signals and the count of go-ahead signals, moving the switch means into a circuit-closed position whenever the difference exceeds a predetermined minimum value, and only then actuating the drive signalling means to send a drive signal to the drive control means, so as to produce said drive signal in dependence on said go-ahead signal, whereby said unit distance and therefore the spacing between plants is reduced after a digging attempt has been aborted, so as to maintain a preselected average plant density.

4,342,271

STITCH LENGTH RANGE INDICATING ARRANGEMENT IN A MULTIPLE PATTERN SEWING MACHINE

Robert J. Socha, Elizabeth, N.J., assignor to The Singer Company, Stamford, Conn.

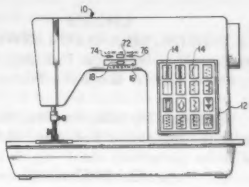
Filed Aug. 13, 1981, Ser. No. 292,462
Int. Cl.³ D05B *3/02, 79/00*
U.S. Cl. 112—158 E **7 Claims**

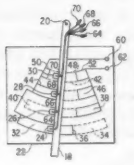
2. In a multiple pattern sewing machine having means for operator selection of a pattern to be sewn and operator influenced means for adjusting the relative stitch length within a selected pattern, the improvement comprising:

means for defining a preferred range of relative stitch lengths for each of said patterns;

indicator means for communicating with an operator, said indicator means including at least a first indicating element, said first indicating element being selectively energizable to assume an operator perceivable state; and

control means responsive to pattern and stitch length selection for controlling said indicator means, said control means responding to a selected stitch length within the





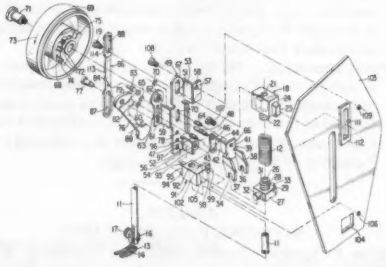
selected pattern preferred range for energizing said first indicating element.

4,342,272

PRESSER BAR BIASING SPRING STRUCTURE

James A. Transue, Union, and William Weisz, Tenafly, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Oct. 3, 1979, Ser. No. 81,404
Int. Cl.³ D05B *29/02*
U.S. Cl. 112—237 **13 Claims**



1. A presser bar mechanism for a sewing machine, the mechanism comprising:

a cylindrical presser bar reciprocally movable in its axial direction and having its first and second presser bar ends, the first end comprising means to attach a presser foot thereto;

a helical extension spring surrounding a region of the presser bar between the first and second presser bar ends and having first and second spring ends nearer the fist and second presser bar ends, respectively;

first holding means to hold the second spring end at a first location on the presser bar nearer the second presser bar end than the first presser bar end;

second holding means to hold the spring so that the spring is substantially concentric with respect to the presser bar and so that the first spring end is at a location closer to the first presser bar end than is the first location;

a bracket;

first attachment means to attach one of the holding means to the bracket; and

second attachment means to attach the other of the holding means to the bracket, at least one of the attachment means comprising slidably movable means to allow one of the

holding means to slide relative to the other of the holding means parallel to the axial direction of the presser bar.

4,342,273

MATERIAL SENSING MEANS FOR SEWING MACHINES

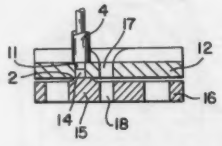
W. Andreas Petzold, Überlingen, Fed. Rep. of Germany, assignor to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,322

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935473

Int. Cl.³ D05B *69/00*

U.S. Cl. 112—272 3 Claims



1. For use with a sewing machine having a throat plate over which a workpiece is progressively moved, a presser foot assembly and an apparatus for indicating when the leading and trailing ends of the workpiece travel under the presser foot assembly, said apparatus comprising:

fiber optic means capable of transmitting light and having its free end mounted for movement with the presser foot assembly;

reflective surface means provided on the throat plate and arranged opposite the free end of the fiber optic means;

a transparent insert arranged intermediate the free end of said fiber optic means and the reflective surface and which is arranged flush with a lower work engaging surface on said presser foot assembly; and

means connected to the other end of said fiber optic means which are responsive to the interruption and restoration of light caused by the ends of the workpiece passing between the end of the fiber optic means and the reflective surface, said means responsive being capable of producing a signal indicative of such workpiece passage.

4,342,274

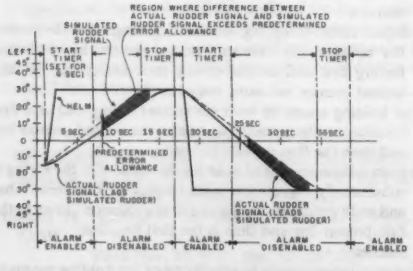
STEERING FAILURE ALARM

William T. Spurgin, Charlottesville, and Charles R. Wesner, Crozet, both of Va., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 11, 1980, Ser. No. 176,945

Int. Cl.³ B63H *25/36*

U.S. Cl. 114—144 E 4 Claims



1. An improved ship's steering failure alarm which is adaptable for use with steering systems having non-linear rudder positioning and either constant or inconstant rate characteristics; and which is of the type having means for providing simulated and actual rudder position signals, means for comparing said simulated and actual rudder position signals, and means for providing an alarm activating signal when a comparison threshold has been exceeded; wherein the improvement comprises:

means for shaping either said simulated or actual rudder position signals when a non-linear relationship exists between said actual and said simulated rudder signals;

first timing means for disabling said alarm activating signal after an initial comparison period and prior to a period when a substantially inconstant rate relationship exists between said actual and said simulated rudder signals; and

second timing means for reenabling said alarm activating signal after the rudder should have reached its ordered position.

4,342,275

FIN RUDDER FOR SHIPS

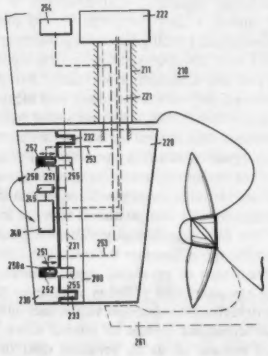
Joachim Brix, Hamburg, and Friedrich Weiss, Ahrensburg, both of Fed. Rep. of Germany, assignors to Jastram-Werke GmbH KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 860,605, Dec. 14, 1977, abandoned. This application Dec. 5, 1979, Ser. No. 100,545

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656738; Nov. 11, 1977, 2750437

Int. Cl.³ B63H *25/06*

U.S. Cl. 114—162 9 Claims

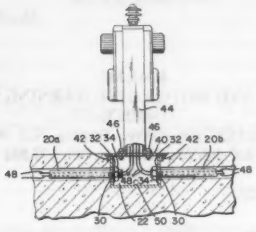


1. A rudder assembly for marine craft comprising: a main rudder member pivotally coupled to said marine craft for deflection relative thereto; a fin member pivotally coupled to said main rudder member for deflection relative thereto; and an actuating and control system comprising first control means operative to effect deflection of said main rudder member relative to said marine craft and second control means operative to effect deflection of said fin member relative to said main rudder member; said first control means being capable of effecting deflection of said main rudder member relative to said marine craft independently of said second control means; said second control means being effective to effect deflection of said fin member relative to said main rudder member independently of said first control means; said actuating and control system comprising hydraulic actuating means powered through hydraulic lines of said system by a steering gear of said marine craft in order to supply pivoting torque for said fin member, and a hydro-pneumatic fin retard arrangement operative to effect elimination of the fixed ratio of the angles of main rudder member and fin member in dependence upon fin torque, said retard arrangement being equipped with return tanks for pressure gas contained within said system corresponding to a maximum fin torque and with bias pressure tanks.

4,342,276
INTERCONNECTING SYSTEM FOR MARINE FLOATS

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Jun. 30, 1980, Ser. No. 164,915
Int. Cl.³ B63B *35/44*
U.S. Cl. 114—266 8 Claims



1. A system for interconnecting first and second marine floats end-wall-to-end-wall, comprising:

a sheet of cushioning material positioned between adjacent end walls of said first and second floats;

a tubular conduit extending between said first and second floats through said cushioning material;

first and second junction boxes embedded, respectively, in said first and second floats, said junction boxes receiving respective ends of said conduit;

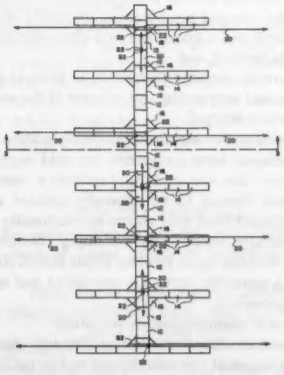
fastening mens for resiliently securing the respective ends of said conduit to said first and second junction boxes to allow said conduit to move axially and pivot with respect to said junction boxes responsive to relative pivotal movement between said first and second floats; and

a utility conductor extending through said conduit between said junction boxes whereby said conduits provide both mechanical and utility interconnections between said first and second floats.

4,342,277
ANCHORING SYSTEM FOR FLOATING MOORAGE

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Jan. 7, 1980, Ser. No. 110,084
Int. Cl.³ B63B *21/24*
U.S. Cl. 114—293 17 Claims



1. An anchoring system for floating moorages formed by a plurality of aligned mainwalk floats having a plurality of spaced-apart finger floats projecting perpendicularly therefrom, said system comprising:

a generally horizontal grid of post-tensioned cables positioned beneath said floats;

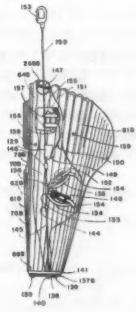
a plurality of anchor lines extending between said floats and said grid, the angle of said lines with respect to the horizontal being relatively small to minimize the downward forces imparted to said floats by said lines, said lines extending in opposite directions beneath said mainwalk floats and said finger floats, with pairs of lines extending beneath said finger floats alternating with pairs of lines extending beneath said mainwalk floats such that horizontal forces exerted on said floats by each line are opposed by substantially equal horizontal forces exerted in an opposite direction by another line, and said lines are shielded by said mainwalk floats and said finger floats; and

at least one weight secured to each of said anchor lines to maintain the tension in said lines substantially constant as said floats rise and fall responsive to tidal action.

4,342,278
MINIATURE INFLATABLE CONTAINMENT AND DRY-WATER-ENTRY VESSELS

John J. Horan, 60 Deerpath Rd., Chalfont, Pa. 18914

Filed Oct. 15, 1980, Ser. No. 197,321
Int. Cl.³ B63B *7/08*
U.S. Cl. 114—345 72 Claims



1. A miniature vessel comprising:

a hull of waterproof material, said hull having a relatively deep stern, said stern having an arcuate form when said vessel is inflated and occupied in water;

a bottom tapering upwardly from an inverted apex at said stern to a shallow bow; a gunwale tapering outwardly on both sides of said hull from said bow toward and around said stern; and generally planar, precipitation-excluding, access-deck means, formed of material compatible for attachment to said first-mentioned material;

said deck means being structurally joined to and covering the full area defined within said gunwale,

said deck means including access-fastener means adapted, when opened, to permit expeditious, whole-body entry of an occupant into said vessel and his eventual exit therefrom, and when closed by him to complete his whole-body enclosure within said vessel,

said hull being formed of superimposed inner and outer sheets of generally similar shape and generally symmetrical about a transverse midline defining the cenerline of said stern,

said sheets being welded together along a continuous seam outlining the inflatable area therewithin and leaving seam-edge strip means extending outwardly thereof,

said strip means being generally of width adequate for structural bonding of at least one seam outwardly of said continuous seam,

said sheets being further bonded together discontinuously inwardly of said seam to form inflatable segments,

said segments being so proportioned that their inflated thicknesses and, consequently, the inflated thickness of said hull, will increase from said bow to said stern and from said bottom toward said gunwale,

the left and right halves of said strip means projecting below and forwardly of said hull being sealably, structurally and medially bonded thereacross, permissibly via medial attachment thereto of at least one of a bottom deck and forward extension,

said vessel including inflation means therefor,

said hull being adapted for inflation in a vertical, stern-uppermost attitude in behalf of an occupant standing therewithin on said bow and facing said deck means,

whereupon, with said access fastener closed, said occupant may jump, slide or be lowered into water or dry, self-righting water entry and insulated flotation thereafter, and

whereby, with the buoyancy of the interior air retained by said deck means around and above the ballasting weight of said occupant now thrusting directly upwardly against said deck means in addition to the upwardly directed buoyancy so patterned among said so-proportioned segments, said vessel achieves extraordinary buoyancy and upright stability against steeply rising wave fronts and a high self-righting moment after a plunge into water, even at initially unfavorable attitudes.

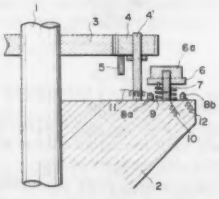
4,342,279

DEVICE FOR DETECTING STEERING ANGLE AND DIRECTION

Yasutoshi Seko, Yokohama, and Takayuki Yanagishima, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Claims priority, application Japan, Aug. 28, 1979, 54-118 105[U]

Filed Aug. 14, 1980, Ser. No. 177,995
Int. Cl.³ B60Q *1/42*
U.S. Cl. 116—31 **6 Claims**



1. A device for detecting a steering angle and steering direction of an automotive vehicle, comprising:

(a) a steering wheel;

(b) a steering column shaft connected to the steering wheel;

(c) a first gear fixed to the steering column shaft so that the first gear rotates together with the steering column shaft in the same direction;

(d) a second gear which is driven by the first gear in such a way that when the first gear rotates in one direction the second gear rotates in the opposite direction;

the improvement comprising:

(e) a pair of first and second fixed contacts fixed relative to the automotive vehicle;

(f) signal producing means including a movable contact formed and arranged in such a manner that, when the steering wheel rotates in one direction, the movable contact engages only the first fixed contact to produce a pulse signal, and when the steering wheel rotates in the opposite direction, the movable contact engages only the second fixed contact to produce a pulse signal; and

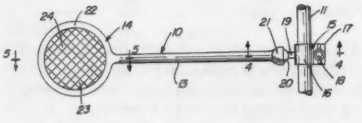
(g) means for electrically detecting the rotation number of the second gear and the rotation direction thereof on the basis of the pulse signals produced so that the steering angle and the steering direction of the steering wheel can be detected.

4,342,280

BICYCLE AND MOTOR BIKE WARNING SIGNAL DEVICE

Sara Ashworth, 115 Carlton Ave., Trenton, N.J. 08618

Filed Jul. 30, 1980, Ser. No. 173,592
Int. Cl.³ B60Q *1/34*
U.S. Cl. 116—202 **1 Claim**



1. A warning signal device adapted to be mounted on a supporting element on a vehicle in the form of a bicycle, motor bike, or like vehicle, comprising:

(a) a supporting arm member including

(1) an outer end portion having thereon

(2) a light-reflective warning signal element;

(3) an inner end portion;

(4) clamping means for detachably mounting the said inner end portion of the said supporting arm member and attached light-reflective warning signal element on a supporting element on the vehicle and at one side thereof;

(5) pivotal mounting means for pivotally mounting the said supporting arm member and attached light-reflective warning signal device on the said clamping means so that the said supporting arm member and the said light-reflective warning signal element thereon may be manually pivoted by the vehicle rider on the said pivotal mounting means into a generally horizontally extending effective or nighttime warning signal position at one side of the vehicle or into a generally vertically extending and upright and daylight or ineffective position, the said pivotal mounting means including

a. a ball-shaped head formed integrally with and as a lateral extension of the said clamping means at one side thereof; and

b. a socket member formed as an integral extension of the said supporting arm member at the said inner end portion thereof.

(6) the said socket member frictionally embracing the said ball-shaped head to enable the said supporting arm member and the said light-reflective warning signal element thereof to be manually pivoted on the said ball-shaped head into, and to be frictionally retained in, a generally horizontally extending effective or nighttime warning signal position at one side of the vehicle or into a generally vertically extending and upright daylight position;

(7) the said clamping means including

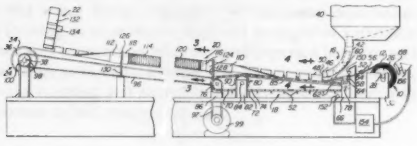
a. a web member formed integrally with the said clamping means at one side thereof and projecting laterally therefrom; and

b. the said ball-shaped head being formed as an integral extension of the said web member.

4,342,281
APPARATUS FOR PRINTING ARTICLES FROM HEAT TRANSFER PAPER

Danny L. McMillin, Golden, and James S. Stirbis, Littleton, both of Colo., assignors to Coors Container Company, Golden, Colo.

Division of Ser. No. 159,876, Jun. 16, 1980, Pat. No. 4,323,601, which is a division of Ser. No. 943,372, Sep. 18, 1978, Pat. No. 4,250,831. This application Jun. 29, 1981, Ser. No. 278,787
Int. Cl.³ B05C *1/14*
U.S. Cl. 118—32 **1 Claim**



1. Apparatus for continuous application of individual ink images to individual articles comprising:

continuously operable sheet conveying means for causing continuous longitudinal movement at a uniform velocity of an elongated sheet of material having a plurality of heat transferrable ink images located thereon in sequential uniform equally spaced relationship therealong;

continuously operable article conveying means for causing continuous longitudinal movement of a plurality of unprinted articles at a uniform velocity equal to the velocity of and in the same direction as and in laterally offset parallel relationship with the elongated sheet of material and in sequential uniform equally spaced relationship corresponding to the uniform sequential equally spaced relationship of the heat transferable ink images on the elongated sheet of material and in aligned relationship therewith;

wrapping means continuously operably associated with the elongated sheet of material for continuously wrapping a portion of the elongated sheet of material into image transferring relationship with the unprinted articles during continuous movement of the unprinted articles and the elongated sheet of material with adjacent ones of the heat transferrable ink images being sequentially associated with adjacent ones of the unprinted articles;

heat applying means operable associated with the wrapped portion of the elongated sheet of material and the unprinted articles wrapped therewithin for sequentially continuously applying heat thereto during continuous movement of the wrapped portion of the elongated wrapped sheet of material and the articles wrapped therewithin relative to the heat applying means to cause sequential transfer of the adjacent ones of the heat transferrable ink images to the adjacent ones of the unprinted articles;

unwrapping means continuously operably associated with the elongated sheet of material for unwrapping the elongated sheet of material from the articles after transfer of the heat transferrable ink images to the articles; and

discharge article conveying means for disassociating the printed articles from the elongated sheet of material after unwrapping of the elongated sheet of material.

4,342,282
TONER CARTRIDGE

Keitaro Yamashita, Kamisatomachi, and Toshio Kumakura, Omiya, both of Japan, assignors to Hitachi Metals, Ltd., Japan

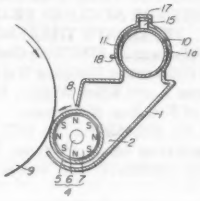
Filed Jul. 30, 1981, Ser. No. 288,342
Claims priority, application Japan, May 7, 1980, 55-60402
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—657 **2 Claims**

1. In combination with a developing device using a magnetic toner comprising a hopper for the magnetic toner and a nonmagnetic sleeve having a magnetic roll mounting a plurality of magnetic poles therein, the magnetic roll and the nonmagnetic sleeve rotating relative to each other to draw by magnetic attraction and transport the magnetic toner on the nonmagnetic sleeve, a toner cartridge capable of being detachably fitted in said developing device comprising:

a hollow container of a substantially cylindrical shaped closed at opposite ends;

a toner supply opening formed at an outer circumferential surface of said hollow container to extend longitudinally thereof;

a knob attached to one end of said hollow container;



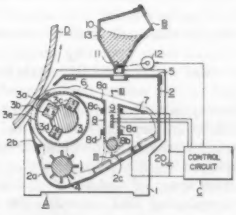
a projection formed on an outer circumferential surface of the other end of said hollow container, said projection being adapted to be inserted in a guide groove formed in said hopper and extending longitudinally, said guide groove having a length such that when said hollow container is wholly inserted in the hopper by being moved along the guide groove, said projection is released from engagement in the guide groove to allow the hollow container to move in rotary movement; and

a stopper for said projection formed at the end of said guide groove to restrict the rotation of said hollow container in a predetermined direction to a range from said toner supply opening to the underside of the container.

4,342,283
DEVELOPING APPARATUS FOR ELECTROSTATIC DUPLICATOR

Isamu Terashima, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,114
Claims priority, application Japan, Nov. 24, 1979, 54-151327
Int. Cl.³ B05B *5/02*; G03G *15/09*
U.S. Cl. 118—689 **5 Claims**



1. A developing apparatus for electrostatic duplicator comprising:

a developing agent including a magnetic carrier and a nonmagnetic toner;

a container in which said developing agent is placed;

means for transporting the developing agent in said container to an electrostatic latent image surface of a recording medium;

means for passing part of said developing agent into a detecting container;

means for detecting permeability of the developing agent passing in the detecting container; and

means for magnetizing the developing agent within a detection region in said detecting container in the direction of flow of the developing agent and within the range of a magnetic flux density such that the permeability of the developing agent is little changed with a change in the magnetic field whereby the developing agent is allowed to pass readily through the detection region.

4,342,284

PROCESS FOR THE COATING OF PARTICLES FOR THE PRODUCTION OF FUEL AND/OR ABSORBING ELEMENTS FOR NUCLEAR REACTORS AND APPARATUS THEREFOR

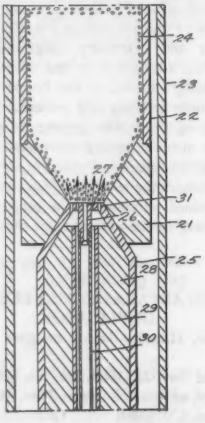
Harald Löser, Selzerweg 34, 8756 Kahl; Gerhard Schmidt, Holzgasse 7, 6460 Gelnhausen; Wolfgang Warzawa, Wiesenstrasse 15, 6450 Hanau 9, and Klaus Wegner, Hintergasse 10, 6450 Hanau 1, all of Fed. Rep. of Germany

Division of Ser. No. 805,452, Jun. 10, 1977, Pat. No. 4,271,207. This application Jan. 3, 1978, Ser. No. 866,339

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626446

Int. Cl.³ C23C *11/10*

U.S. Cl. 118—716 **13 Claims**



1. An apparatus suitable for use in a process of coating particles of fuel, fertile material, absorber material or mixtures thereof which can be employed in nuclear reactors, in which process thermally cleavable gases are introduced into a reaction space heated to an operating temperature of a fluidized bed unit provided with a gas inlet nozzle having an elongated inlet tube and cooled with a cooling medium, the cleavable gases are decomposed after leaving said nozzle and the decomposition products are deposited on said fuel, fertile material or absorber particles present in the fluidized bed, and the cooling medium employed is solely gaseous, said apparatus comprising, in said reaction space of said fluidized bed unit, inlet nozzle means for introducing said cleavable gas into said reaction space, said nozzle means including an outer tube having an axis, an inner tube disposed radially within said outer tube for carrying the cleavable gas, said inner tube having a nozzle tip with said tip having one end exposed to said reaction space and its other end spaced a distance therefrom, a cooling tube also disposed radially within said outer tube and surrounding said inner tube and having an end terminating at a cooling chamber, said cooling chamber surrounding at least a portion of said nozzle tip so that, when a cooling gas is passed through said cooling tube, said portion will be exposed to said cooling gas to cool said nozzle tip, an insulating layer disposed radially between said outer tube and said cooling tube, said outer tube being made of a heat-resistant material with a melting point above the operating temperature of said unit.

4,342,285

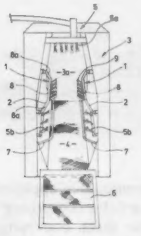
ANIMAL TREATMENT TUNNELS OR RACES

Ian W. James, 50 Hemans St., Cambridge, New Zealand

Filed Oct. 28, 1980, Ser. No. 201,476

Int. Cl.³ A01K *29/00*

U.S. Cl. 119—155 **8 Claims**



1. Guide apparatus for an animal tunnel or race, said guide apparatus comprising at least two guiderails, one for each side of the tunnel or race, each of said guiderails being mountable with respect to opposite side walls of a tunnel or race so as to extend inward and lengthwise thereof and having a plurality of projecting fenders extending therefrom inwardly of the tunnel or race, the ends of said fenders being directed toward the exit from the tunnel or race and defining a central passage within the tunnel or race which animals passing through must negotiate; said fenders being fixedly and non-rotatably mounted and of sufficient strength and resiliency to deter the animals from colliding with the walls of the race and to prevent the animals from reversing direction within the race.

4,342,286

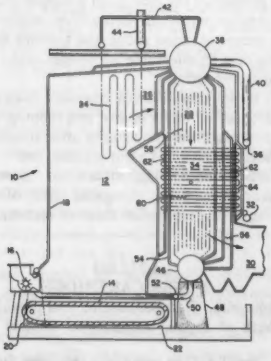
INTEGRAL ECONOMIZER STEAM GENERATOR

William H. Pollock, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 30, 1979, Ser. No. 99,184

Int. Cl.³ F22B *21/00*

U.S. Cl. 122—336 **3 Claims**



1. A bottom supported steam generator for burning a solid fuel comprising: a steam drum at an upper elevation; a water drum at a lower elevation; means for supporting said water drum from the ground; a plurality of front wall tubes forming a front wall, and a plurality of rear wall tubes forming a rear

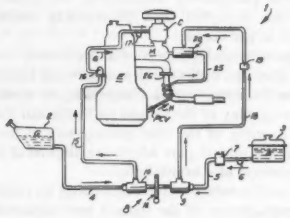
wall, said walls connecting said steam drum and water drum and forming a vertical gas pass, the front wall having an inlet opening at only the upper end for the ingress of gases and a rear wall having an outlet opening at only the lower end for the egress of gases; a furnace for the burning of fuel therein; steam generating tubes lining the walls of said furnace and connected to said steam drum; means for conducting combustion gases from said furnace to the inlet opening of said vertical gas pass; a plurality of vertical tubes arranged in a plurality of rows within said vertical gas pass, and connecting said steam drum with said water drum, and supporting said steam drum from said water drum; a plurality of horizontal economizer tubes forming an economizer bank and arranged in a plurality of rows, said economizer tubes each interspersed between said vetical tubes at elevations below the inlet opening and above the outlet opening; and means for conveying water from said economizer to said steam drum.

4,342,287

METHOD AND APPARATUS FOR UTILIZING ALCOHOL AS FUEL FOR INTERNAL COMBUSTION ENGINE

Jose Ma. R. Concepcion, Manila, Philippines

Filed Jan. 28, 1980, Ser. No. 115,616
Int. Cl.³ F02B *75/12, 25/06*
U.S. Cl. 123—1 A **6 Claims**



1. A method for feeding alcohol and gasoline fuels to an internal combustion engine wherein the alcohol to gasoline ratio is controlled by a double acting metering device and the alcohol fuel is vaporized using heated positive crankcase ventilation gas, which comprises:

(a) withdrawing alcohol and gasoline fuels from separate fuel tanks through separate fuel lines;

(b) conveying the alcohol fuel using a liquid conveying means to a vaporizing means;

(c) conveying the gasoline fuel using a liquid conveying means to a carburetor means;

(d) controlling the alcohol to gasoline ratio using a double acting metering means;

(e) conveying engine positive crankcase ventilation gas to the vaporizing means through a conduit means by force of crankcase pressure;

(f) heating the engine positive crankcase ventilation gas with engine exhaust gas heat using a heat exchange means through which said conduit passes;

(g) simultaneously introducing the alcohol fuel and the heated positive crankcase ventilation gas into the vaporizing means;

(h) vaporizing the alcohol fuel in the vaporizing means by contact with the heated positive crankcase ventilation gas;

(i) introducing the gasoline fuel into an engine intake manifold through the carburetor means;

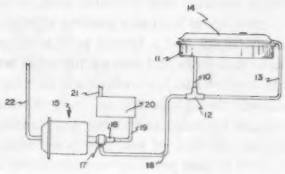
(j) conveying the vaporized alcohol fuel and the positive crankcase ventilation gas from the vaporizing means and introducing said alcohol fuel and positive crankcase ventilation gas into the engine intake manifold by pressure means.

4,342,288

WATER INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kazuo Sato, Ogden, Utah, assignor to The Klane Corporation, Ogden, Utah

Filed Jun. 30, 1980, Ser. No. 164,794
Int. Cl.³ F02D *19/00*
U.S. Cl. 123—25 B **3 Claims**



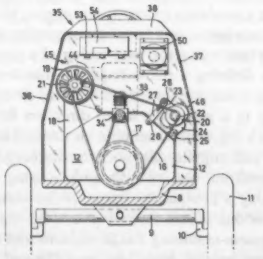
1. A method for controlling the injection of a heated vaporized air-water mixture into the fuel system of an internal combustion engine which comprises a vacuum control valve which operates to prevent the flow of air-water mixture when both fully opened and closed and is responsive to intake manifold vacuum pressures of the internal combustion engine such that at engine idle speeds, the manifold vacuum pressure fully opens said control valve presenting the flow of air-water therethrough whereas at intake manifold pressures less than that at engine idle speed and greater than zero said control valve operates to allow air and water to be drawn from an air source and a water source to an air water metering means to form an air-water mixture which mixture then passes through said control valve to a heating means for additional vaporization and then into the air fuel mixture entering the intake manifold of said engine and wherein the lower the intake manifold vacuum pressure drops from the pressure at engine idle speed, the greater the amount of air-water mixture passing through the control valve will be, providing the intake manifold pressure does not drop to zero.

4,342,289

INTERNAL COMBUSTION ENGINE, ESPECIALLY AIR-COOLED INTERNAL COMBUSTION ENGINE FOR VEHICLES AND DRIVING UNITS

Hermann-Josef Komp, Bad Münstereifel, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 933,139, Aug. 14, 1978, abandoned.
This application Dec. 10, 1980, Ser. No. 214,634
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736378
Int. Cl.³ F02P *1/02*
U.S. Cl. 123—41.7 **6 Claims**



1. An internal combustion engine which is air-cooled for tractor vehicles and driving units, comprising in combination:

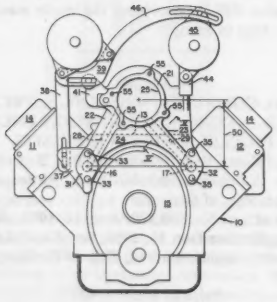
a crankcase, a plurality of cylinders, an outer mantle and at least one auxiliary machine arranged externally adjacent said crankcase, a V-belt driving means for said at least one auxiliary machine, cooling means for cooling said cylinders including a cooling air blower that provides a flow of air conveyed in a direction toward said at least one auxiliary machine to ventilate the outer mantle thereof, a front partition arranged transverse to the flow of the air conveyed in the direction of said at least one auxiliary machine and provided with an air withdrawing channel formed by at least one guiding separation wall including a rear partition and a lateral part arranged substantially transverse to said front and rear partitions as well as extending to one side thereof and preventing said cooling air from being short-circuited, the at least one auxiliary machine to be cooled being arranged laterally and above said crankcase within the region of one end face of said crankcase ahead of said front partition and is at least partially surrounded by said front partition as a container, a gearbox being connected to said front partition for noise reduction, a torsional vibration balancer smoothing V-belt running arranged ahead of said front partition, and wherein said V-belt driving means having a location preceding said front partition.

4,342,290

WATER PUMP HOUSING

John Drakulic, Box 482 -1st St., Trafford, Pa. 15085

Filed Oct. 28, 1980, Ser. No. 201,511
Int. Cl.³ F01P *5/10*
U.S. Cl. 123—41.47 **5 Claims**



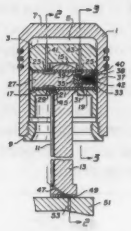
1. A housing to support the casing of a driven pump for supplying a coolant medium to the engine block of an internal combustion engine, said housing comprising a pump-mounting flange section to support said casing of a driven pump, chamber walls defining a pump impeller chamber extending from said pump-mounting flange section, two diverging leg sections extending in a generally radial direction from said chamber walls, each leg section defining an internal duct communicating with said impeller chamber for discharging a coolant medium therefrom, and two flanged housing support sections each having a coolant discharge cavity communicating with the duct in one of said radially-extending leg sections, both of the said pump-mounting flange sections and the said chamber walls being spaced from said two flanged housing support sections to substantially expose the engine block when supported thereby for access thereto below the chamber walls and between said diverging leg sections.

4,342,291

EXPANDABLE PISTON MOTOR

William C. Lewis, 7560 Belair Dr., Richmond, British Columbia, Canada

Filed Jan. 16, 1980, Ser. No. 112,595
Int. Cl.³ F02B *75/04*
U.S. Cl. 123—78 B **13 Claims**



7. An internal combustion engine comprising:

a piston having first and second coaxial parts movable axially relative to each other in the direction of reciprocation of the piston and having a chamber therebetween which varies in volume with said relative movement, the second part having a recess for rotatably receiving a wrist pin, an inlet fluid passageway connecting the chamber to the recess and an outlet fluid passageway connecting the chamber to the recess;

a wrist piston rotatably received in the recess, the wrist pin having inlet and outlet fluid passageways therethrough;

an inlet oscillo-rotary valve comprising an opening of the inlet passageway of the second part adjacent the wrist pin and an opening of the inlet passageway of the wrist pin adjacent the second part which are aligned at a first rotational position of a crankshaft;

an outlet oscillo-rotary valve comprising an opening of the outlet passageway of the second part adjacent the wrist pin and an opening of the outlet passageway of the wrist pin adjacent the second part which are aligned at a second rotational position of the crankshaft;

a check valve within said outlet passageways for permitting a flow of fluid from the chamber when said fluid is above a set pressure;

a connecting rod non-rotatably mounted on the wrist pin and having a big end rotatably mounted on a crank pin of a crankshaft, the connecting rod having a conduit communicating at a first end with the inlet passageway of the wrist pin and having an opening at a second end adjacent the crank pin;

an opening for pressurized lubricant on the crank pin; and

an inlet rotary valve comprising the opening on the crank pin and the opening at the second end of the connecting rod conduit which are aligned at the first rotational position of the crankshaft.

4,342,292

IGNITION DISTRIBUTOR

Ronnalee House, and Byron W. Johnson, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1980, Ser. No. 198,367
Int. Cl.³ F02P *5/00, 7/00;* **H01H** *19/00*
U.S. Cl. 123—146.5 A **8 Claims**

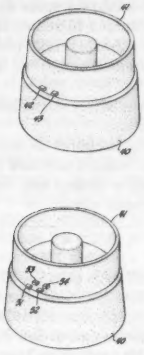
1. An internal combustion engine ignition distributor for sequentially directing the ignition spark potential induced in the secondary winding of the engine ignition system ignition coil to the spark plugs of the engine comprising:

an output circuit corresponding to each said spark plug of an associated said internal combustion engine;

an ignition spark energy conductive circuit arranged for electrical connection to a said ignition coil secondary

winding and so formed and positioned that it is substantially equally spaced from each of said output circuits;

a rotatable member of an insulating material arranged to be rotated in timed relationship with an associated said internal combustion engine and having an annular insulating rib portion disposed between said ignition spark energy conductive circuit and said output circuits; and



two circumferentially spaced juxtaposed conductive inserts supported by and extending through said annular insulating rib portion in such a location that each passes in spark gap relationship with both said ignition spark energy conductive circuit and successive ones of said output circuits when said rotatable member is rotated.

4,342,293

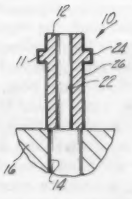
VALVE GUIDE AND METHOD FOR MAKING SAME

James W. Nickerson, Mobile, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jan. 25, 1980, Ser. No. 115,345

Int. Cl.³ F01L *3/08*

U.S. Cl. 123—188 GC **3 Claims**



1. A valve guide for a stem of a valve in an internal combustion engine having a valve guide bore, said valve guide comprising:

a tubular and cylindrical body having an outer surface and an outer diameter dimensioned to fit at least partially into said valve guide bore and an inner bore through which the valve stem is longitudinally positioned;

the inner bore of the body being nitrided to harden the body around the inner bore;

said body being completely formed prior to installation of said body in said valve guide bore, and

wherein the outer surface of said body is bronze plated.

4,342,294

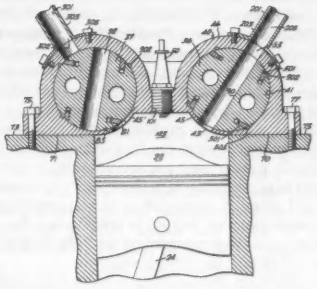
ROTARY ENGINE VALVE WITH IMPROVED SEALS AND LUBRICATION SYSTEM

Phillip R. Hopkins, Hialeah, Fla., assignor to Energy International Corporation, Miami Lakes, Fla.

Filed Jul. 3, 1980, Ser. No. 165,748

Int. Cl.³ F01L *7/00*

U.S. Cl. 123—190 E **9 Claims**



1. In an engine having at least one rotary valve operatively associated with engine cylinders, the rotary valve being rotatable within an aperture formed in an engine head associated with the engine cylinders, and seal structure extending along the rotary valve for sealing that space located between wall surfaces of the aperture within which the valve rotates and outer surfaces of the rotary valve, the seal structure comprising at least four elongated seal members carried by said rotary valve each said seal member having a portion extending into said space to effect sealing against opposing surfaces, the improvement comprising the location of the transverse axis of each said seal member along a line coincident with a non-diametric chord of an axial cross-section of said rotary valve wherein said rotary valve is provided with at least four longitudinally extending, circumferentially spaced recesses extending into said rotary valve and opening into said space, the transverse axis of each of said recesses lying along a line coincident with a non-diametric chord of the cross-section of said rotary valve, each recess having an elongated seal member disposed therein with the portion of the seal member which extends into said space having a surface face which engages the wall surface of the aperture within which the valve rotates to effect sealing of said space and the line of each of said seal members coincident with the non-diametric chord of an axial cross-section of said rotary valve intersects the circumferentially spaced recess of a respective adjoining seal member.

4,342,295

ROTARY INTERNAL COMBUSTION ENGINE

Robert H. Williams, Rte. 2, Box 44, Bandera, Tex. 78003

Division of Ser. No. 30,993, Apr. 18, 1979, Pat. No. 4,286,555, which is a continuation-in-part of Ser. No. 956,206, Oct. 30, 1978, abandoned. This application Mar. 23, 1981, Ser. No. 246,390

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—228 **1 Claim**

1. A rotary internal combustion engine having a four-phase cycle of intake, compression, expansion and exhaust in each revolution of the engine shaft, said engine comprising:

a stator with a cylinder bore enclosed between end walls;

a power shaft in bearings journaled in said end walls and concentric with said cylinder bore;

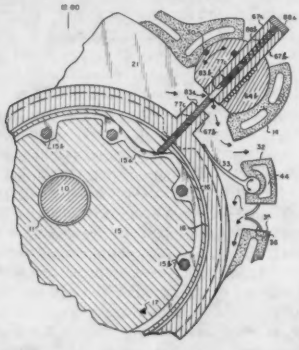
an eccentric annular rotor keyed to said power shaft and positioned approximately midway between said end walls;

an annular piston coextensive with said end walls and fitted on said eccentric rotor and concentric therewith, said piston

and said rotor having a common eccentric head, with said piston head making tangential sealing engagement with said cylinder substantially throughout said cycle;

a first abutment having a first end pivotally secured to said stator near 10:00 o'clock and a second end free to project clockwise into said cylinder space far enough to make tangential, sealing engagement with the face of said piston in all positions of said piston, said abutment making sliding sealing engagement with both end walls and, during the combustion-expansion stroke, making sealing engagement with the face of said piston, thus forming the counterclockwise end of a combustion-expansion chamber for confining a charge of fuel throughout an expansion stroke and exerting pressure against said piston to cause said eccentric rotor to rotate, the cylinder machined away along the edges of said pivot bore in said stator to permit said abutment to pivot inside said cylinder as said piston planetates, said abutment spring biased downward toward the face of said piston by a spring mechanism outside said engine, allowing a predetermined pressure in said compression chamber to force said abutment open and permit a charge of air to be compressed into said combustion chamber and aid in holding said free end of said abutment in sealing engagement with the face of said piston at the end of said compression stroke;

a second abutment closing the clockwise end of the combustion-expansion chamber comprising a rectangular metal plate ridigly affixed to said piston and co-extensive with said



end walls and pointing radially outward from the center of said piston, said second abutment inserted through a slot in a pivoting bearing journaled in said stator near 2:00 o'clock to slidably reciprocate in said slot, said stator machined away along the edges of said bore for said pivoting bearing to enable said second abutment to swing clockwise and counterclockwise as said piston planetates;

a combustion chamber comprising a shallow arcuate cavity in said stator centered near 12:00 o'clock and opening into and combining with said expansion chamber;

a suction chamber and a compression chamber, said suction chamber being the space behind the traveling piston head and said compression chamber being the space forward of said traveling piston head;

an air inlet port in said stator positioned in the vicinity of 3:00 o'clock, said port fitted with a one-way valve to admit air into said suction chamber as movement of said piston head generates a suction;

means for injecting a charge of fuel into said combustion chamber and means for firing said fuel charge in timed relation to the position of said piston head;

exhaust means for expelling spent gases from said combustion-expansion chamber at the end of the power stroke comprising of:

a rectangular slot through the center of said second abutment pointing radially outward from the center of said piston;

a close-fitting metal plate inserted slidably inside said slot in said second abutment, spring biased inward toward the center of said piston, said plate having a narrow arm projecting inward through said slot on each side of said rotor and sliding against a cam bolted to each side of said rotor, said cam shaped to allow said sliding plate to spring inward at the end of the expansion stroke to bring a port in said plate into mating position with a port in said abutment thereby allowing spent gases to escape from said expansion chamber into the space clockwise of said abutment, said cam profiled to return said sliding plate to a sealing position, covering said port in said abutment, within a predetermined number of degrees of rotation of said rotor;

an exhaust port in said stator immediately clockwise of said second abutment; and

a deflector pivotally anchored in said stator immediately clockwise of said exhaust port and spring biased inward against said piston to deflect said spent gases out of said stator via said exhaust port.

4,342,296

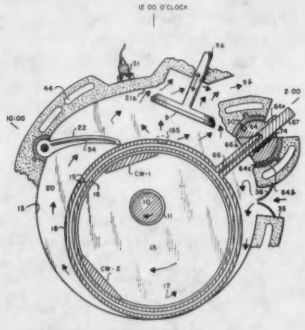
ROTARY INTERNAL COMBUSTION ENGINE

Robert H. Williams, Rte. 2, Box 44, Bandera, Tex. 78003

Division of Ser. No. 30,993, Apr. 18, 1979, Pat. No. 4,286,555, which is a continuation-in-part of Ser. No. 956,206, Oct. 30, 1978, abandoned. This application Mar. 23, 1981, Ser. No. 246,400

Int. Cl.[3] **F02B** *53/00*

U.S. Cl. 123—228 **1 Claim**



1. A rotary internal combustion engine having a four-phase cycle of intake, compression, expansion and exhaust in each revolution of the engine shaft, the engine comprising:

a stator with a cylinder bore enclosed between end walls;

a power shaft in bearings journaled in the end walls and concentric with the cylinder bore;

an eccentric annular rotor keyed to the power shaft and positioned approximately midway between the end walls;

an annular piston coextensive with the end walls and fitted on the eccentric rotor and concentric with it, the piston and rotor having a common eccentric head, the piston head making tangential sealing engagement with the cylinder substantially throughout the cycle;

a first abutment having a first end pivotally secured to the stator near 10:00 o'clock and a second end free to project clockwise into the cylinder space far enough to make tangential, sealing engagement with the face of the piston in all positions of the piston, the abutment making sliding sealing engagement with both end walls and, during the combustion-expansion stroke, making sealing engagement with the face of the piston, thus forming the counterclockwise end of a combustion-expansion chamber for confining a charge of fuel throughout an expansion stroke and exerting pressure against the piston to cause the piston to force the eccentric rotor to rotate, the cylinder machined

away along the edges of the pivot bore in the stator to permit the abutment to pivot inside the cylinder as the piston planetates, the abutment spring biased downward toward the face of the piston by a spring mechanism outside the engine, allowing a predetermined pressure in the compression chamber to force the abutment open and permit a charge of air to be compressed into the combustion chamber and to aid in holding the free end of the abutment in sealing engagement with the face of the piston at the end of the compression stroke;

a second abutment closing the clockwise end of the combustion-expansion chamber comprising a rectangular metal plate rigidly affixed to the piston and coextensive with the end walls and pointing radially outward from the center of the piston, the second abutment inserted through a slot in a pivoting bearing journaled in the stator near 2:00 o'clock to slidably reciprocate in the slot, the stator machined away along the edges of the bore for the pivoting bearing to enable the second abutment to swing clockwise and counter-clockwise as the piston planetates;

a combustion chamber comprising a shallow arcuate cavity in the stator centered near 12:00 o'clock and opening into and combining with the expansion chamber;

a suction chamber and a compression chamber, the suction chamber being the space behind the traveling piston head and the compression chamber being the space forward of the traveling piston head;

an air inlet port in the stator positioned in the vicinity of 3:00 o'clock, the port fitted with a one-way valve to admit air into the suction chamber as movement of the piston head generates a suction;

means for injecting a charge of fuel into the combustion chamber and means for firing the fuel charge in timed relation to the position of the piston head;

exhaust means for expelling spent gases from the combustion-expansion chamber at the end of the power stroke, the means comprising a poppet valve in the perimeter of the combustion chamber.

4,342,297

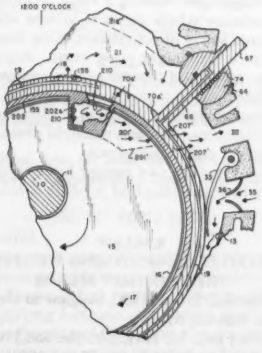
ROTARY INTERNAL COMBUSTION ENGINE

Robert H. Williams, Rte. 2, Box 44, Bandera, Tex. 78003

Division of Ser. No. 30,993, Apr. 18, 1979, Pat. No. 4,286,555, which is a continuation-in-part of Ser. No. 956,206, Oct. 30, 1978, abandoned. This application Mar. 23, 1981, Ser. No. 246,656

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—228 **2 Claims**



1. A rotary internal combustion engine having a four-phase cycle of intake, compression, expansion and exhaust in each revolution of the engine shaft, said engine comprising:

a stator with a cylinder bore enclosed between end walls;

a power shaft in bearings journaled in said end walls and concentric with said cylinder bore;

an eccentric annular rotor keyed to said power shaft and positioned approximately midway between said end walls;

an annular piston coextensive with said end walls and fitted on said eccentric rotor and concentric therewith, said piston and said rotor having a common eccentric head, with said piston head making tangential sealing engagement with said cylinder substantially throughout said cycle;

a first abutment having a first end pivotally secured to said stator near 10:00 o'clock and a second end free to project clockwise into said cylinder space far enough to make tangential, sealing engagement with the face of said piston in all positions of said piston, said abutment making sliding sealing engagement with both end walls and, during the combustion-expansion stroke, making sealing engagement with the face of said piston, thus forming the counter-clockwise end of a combustion-expansion chamber for confining a charge of fuel throughout an expansion stroke and exerting pressure against said piston to cause said eccentric rotor to rotate, the cylinder machined away along the edges of said pivot bore in said stator to permit said abutment to pivot inside said cylinder as said piston planetates, said abutment spring biased downward toward the face of said piston by a spring mechanism outside said engine, allowing a predetermined pressure in said compression chamber to force said abutment open and permit a charge of air to be compressed into said combustion chamber and aid in holding said free end of said abutment in sealing engagement with the face of said piston at the end of said compression stroke;

a second abutment closing the clockwise end of the combustion-expansion chamber comprising a rectangular metal plate rigidly affixed to said piston and co-extensive with said end walls and pointing radially outward from the center of said piston, said second abutment inserted through a slot in a pivoting bearing journaled in said stator near 2:00 o'clock to slidably reciprocate in said slot, said stator machined away along the edges of said bore for said pivoting bearing to enable said second abutment to swing clockwise and counterclockwise as said piston planetates;

a combustion chamber comprising a shallow arcuate cavity in said stator centered near 12:00 o'clock and opening into and combining with said expansion chamber;

a suction chamber and a compression chamber, said suction chamber being the space behind the traveling piston head and said compression chamber being the space forward of said traveling piston head;

an air inlet port in said stator positioned in the vicinity of 3:00 o'clock, said port fitted with a one-way valve to admit air into said suction chamber as movement of said piston head generates a suction;

means for injecting a charge of fuel into said combustion chamber and means for firing said fuel charge in timed relation to the position of said piston head;

exhaust means for expelling spent gases from said combustion-expansion chamber at the end of the power stroke consisting of:

first and second annular sleeves inserted inside said piston on each side of said rotor and bolted thereto, said sleeves rotating closely inside and clearing said piston and coextensive with and clearing said end walls;

a first window through the face of said piston on one side of said rotor beginning at said second abutment and extending counterclockwise a predetermined number of degrees;

a second window through the face of said piston on the opposite side of said rotor extending clockwise from said second abutment a circumferential distance equal to that of said first piston window;

a first window in said first sleeve of the same width and length as said first piston window and on the same side of said rotor;

a first box subtended from said first sleeve window the same width and length as said sleeve window;

a second window in said second sleeve on the opposite side of said rotor having its trailing edge adjacent to the trailing edge of said first sleeve window projecting clockwise for a circumferential distance equal to that of both said first and second piston windows plus the thickness of said second abutment to form an elongated sleeve window;

a second box subtended from said second sleeve window the same width and length as said elongated sleeve window forming an elongated box;

a hole through said rotor communicating with both first and second boxes;

said boxes so positioned on said rotor in relation to the rotor head, that at the end of the power stroke said first box begins to mate with said first piston window, and said elongated box begins to mate with said second piston window, allowing exhaust gases to pour downward via said first piston window into said first box, through said hole in said rotor into said elongated box and forward and out through said second piston window to be exhausted;

an exhaust port in said stator positioned immediately clockwise of said second abutment;

a deflector pivotally anchored in said stator immediately clockwise of said exhaust port, spring biased inward against said piston to deflect said spent gases out of said engine via said exhaust port.

4,342,298

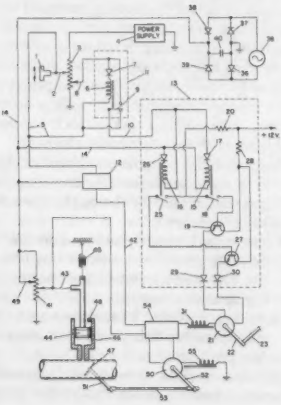
ENGINE AND TRANSMISSION CONTROL APPARATUS

David P. Ganoung, 4406 Chickasaw Rd., Memphis, Tenn. 38117

Continuation-in-part of Ser. No. 20,916, Mar. 14, 1979, Pat. No. 4,280,469. This application Jul. 18, 1980, Ser. No. 170,017

Int. Cl.³ F02D *11/10;* **F02M** *7/00*

U.S. Cl. 123—344 **17 Claims**



1. Apparatus for promoting unthrottled operation of an engine which is controlled by a throttle valve device and which delivers power to a load through a continuously variable ratio transmission, said apparatus comprising:

input means for selecting the desired operating speed of the engine,

ratio control means operative to adjust the ratio of the transmission to thereby substantially eliminate the difference between said desired engine operating speed and the actual operating speed of the engine,

first throttle control means operative to open the throttle device to an effectively wide open position when both (1) the actual operating speed of the engine substantially equals said desired engine operating speed and (2) the operating speed of the engine exceeds the minimum value practical for wide open throttle operation of the engine,

and second throttle control means operative to close the throttle device from an effectively wide open position when both (1) the ratio of the transmission is maintained at a constant value and (2) the actual operating speed of the engine significantly exceeds said desired engine operating speed;

whereby the reduction in engine power output due to the operation of said second throttle control means counteracts increases in power output due to engine speeds which exceed said desired value.

4,342,299

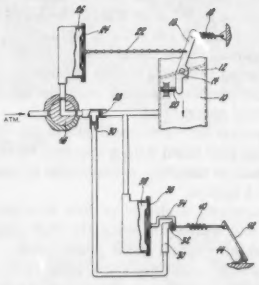
THROTTLE POSITIONING SYSTEM

Raymond J. Haka, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 15, 1980, Ser. No. 187,353

Int. Cl.³ F02D *11/02*

U.S. Cl. 123—396 **2 Claims**



1. A system for positioning a throttle within an engine induction passage to control the manifold pressure in said induction passage downstream of said throttle, said system comprising:

a control diaphragm forming a portion of a chamber adapted to sense said manifold pressure and exerting a force proportional to said manifold pressure,

a spring exerting a biasing force which opposes the force exerted by said control diaphragm,

a servo diaphragm forming a portion of a control pressure chamber,

a valve positioned by said control diaphragm and said spring to create a control pressure in said control pressure chamber,

said servo diaphragm exerting a force proportional to said control pressure which varies in inverse relation to said biasing force and in direct relation to the force exerted by said control diaphragm, said servo diaphragm being adapted to move said throttle to vary said manifold pressure in direct relation to the force exerted by said servo diaphragm, whereby said system is effective to position said throttle to maintain said manifold pressure at a value determined by said biasing force,

and means for varying said biasing force to determine the value at which said manifold pressure is maintained.

4,342,300

STRATIFIED CHARGE ENGINE WITH CHARGE PREPARATION MEANS

William R. Matthes, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 26, 1981, Ser. No. 238,379

Int. Cl.³ F02B *17/00;* **F02M** *25/06*

U.S. Cl. 123—430 **3 Claims**

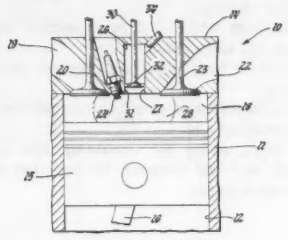
1. A stratified charge internal combustion engine comprising:

means defining a closed end cylinder having a piston reciprocable in the cylinder and defining with the closed end thereof a variable volume combustion chamber,

inlet and exhaust means communicating with said combustion chamber through said cylinder defining means including means for controlling the admission of air to and the exhaust of spent gases from said chamber upon reciprocating motion of said piston through a cycle of sequential intake compression, expansion and exhaust strokes,

a fixed volume charge preparation chamber outside said cylinder adjacent said combustion chamber and communicating therewith through an opening adjacent a selected charge admission portion of said combustion chamber to provide a stratified charge of combustible fuel-air mixture in said portion,

spart ignition means in said combustion chamber charge admission portion and operative to ignite the combustible mixture in said combustion chamber,



valve means associated with said charge preparation chamber to close and open said opening to the combustion chamber, said valve means being operative to open and close during the expansion stroke to receive a charge of pressurized gas from the combustion chamber and trap it for preparation in the charge preparation chamber and further operative to open and close during the compression stroke to discharge a prepared charge into said combustion chamber charge admission portion, and

fuel injection means discharging into the charge preparation chamber and operative to deliver a charge of fuel into the trapped gas charge upon its retention for mixing therewith to form said prepared charge during the major portions of each cycle including the piston exhaust and intake strokes and portions of the power and compression strokes,

whereby an extended time for vaporizing and mixing of the fuel and gas charge in the charge preparation chamber is provided before formation of the stratified charge in the combustion chamber.

4,342,301

DISTRIBUTOR TYPE FUEL INJECTION PUMP

Hitoshi Tomita, and Masayoshi Kobayashi, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,739

Claims priority, application Japan, Apr. 19, 1979, 54-52283[U]

Int. Cl.³ F02M *59/34*

U.S. Cl. 123—502 **6 Claims**

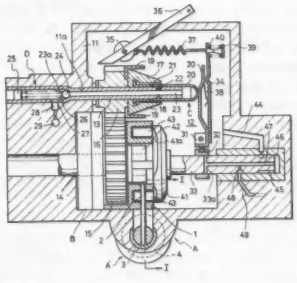
1. In a fuel injection pump for an internal combustion engine, said fuel injection pump being of the type including (a) a housing defining therein a fuel suction chamber, (b) fuel supply means for supplying fuel into said suction chamber at a pressure which is a function of the engine rpm, (c) pump means for supplying fuel in an injecting manner to the engine, (d) an engine rpm governor having a displaceable member which is displaceable as a function of the engine rpm, (e) means connecting said displaceable member of said governor to said pump means for varying the injection quantity of the latter, (f) injection timing control means having a member connected to said pump means and which is displaceable in response to a change in the pressure in said suction chamber for varying the timing of injection of the fuel injection pump, and (g) bias means responsive to the pressure in said suction chamber for biasing said member of said injection timing control means in an injection timing advancing direction after the engine starts and until said pressure in said suction chamber reaches a predetermined value,

the improvement comprising:

A. a first piston forming said member of said injection timing control means, said first piston being displaceable in response to the pressure in said suction chamber, the position of said first piston determining the timing of injection of the fuel injection pump;

B. a first spring forming part of said injection timing control means and arranged to urge said first piston in an injection timing retarding direction;

C. a second piston forming part of said bias means and having a pressure applying area larger than that of said first piston, said second piston being responsive to the pressure in said suction chamber for biasing said first piston in an injection timing advancing direction after the engine starts and until said pressure in said suction chamber reaches said predetermined value;



D. a second spring forming part of said bias means and having an urging force which is larger than that of said first spring, said second spring being arranged to urge said second piston to cause it to bias said first piston in an injection timing advancing direction;

E. means extending into said suction chamber and defining a drainage passage leading from said suction chamber to a zone under a lower pressure than the pressure in said suction chamber;

F. drainage control means forming part of said displaceable member of said governor and adapted to control the drainage of fuel through said drainage passage as a function of the position of said displaceable member of said governor; and

G. a valve disposed in said drainage passage downstream of said drainage control means and controlling the flow of fuel received from said drainage control means, said valve being adapted to open at a predetermined pressure of fuel flowing in said drainage passage corresponding to an engine rpm which exceeds a lower engine rpm including idling rpm;

whereby said drainage passage is blocked by said valve unless said predetermined valve opening pressure of said valve is exceeded by the pressure of fuel flowing in said drainage passage, to thus keep fuel from escaping from said suction chamber to said lower pressure zone.

4,342,302
CONTROL APPARATUS FOR A FUEL INJECTION PUMP

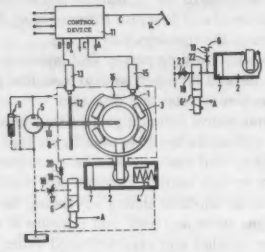
Max Straubel, Stuttgart; Max Greiner, Gerlingen, and Helmut Laufer, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 21, 1980, Ser. No. 151,846

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, 2923445

Int. Cl.³ F02D *1/02, 1/16;* **F02M** *39/00*

U.S. Cl. 123—502 **5 Claims**



1. A control apparatus for the variation of the onset of supply by a fuel injection pump having a cam drive, the control apparatus including:

a fluid supply pump connected to the engine and the fuel injection pump to provide fluid at an rpm-dependent pressure to the fuel injection pump.

an adjustment piston connected to the cam drive to adjust cam drive position, and having a work chamber connected to the fluid supply pump such that the fluid provides a biasing force to the work chamber which biases the adjustment piston in a first direction;

a restoring means connected to the adjustment piston and which generates a restoring force to bias the adjustment piston in a second direction;

wherein the adjustment piston is connected to the supply pump and the cam drive such that the cam drive generates a reactionary force to bias the adjustment piston in the second direction upon actuation of the supply pump;

a control means connected to the work chamber which controls fluid flow out of the work chamber such that the adjustment piston is displaced in the second direction in response to the restoring force and the reactionary force to prolong the supply of fuel to the fuel injection pump.

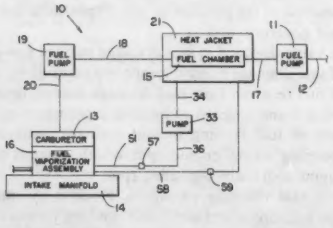
4,342,303
FUEL VAPORIZER AND CARBURETOR PREHEATER SYSTEM

Robert L. McCord, 2000 Mark Ct., Kokomo, Ind. 46901

Filed Sep. 15, 1980, Ser. No. 187,411

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **10 Claims**



1. An apparatus for preheating the fuel and carburetor and for improving vaporization of the fuel, said apparatus being for use with an internal combustion engine having a fuel tank connectable to the carburetor mounted to an intake manifold, which comprises:

a fuel chamber;

first connecting means for connecting said fuel chamber to the fuel tank;

second connecting means for connecting said fuel chamber to the carburetor;

a heat chamber adjacent said fuel chamber;

a vaporization assembly mounted between the carburetor and the intake manifold and including a frame defining an aperture corresponding to openings in the carburetor and intake manifold, said vaporization assembly including, consecutively, a first screen covering the aperture of the frame, a vaporizer conduit extending into the aperture of the frame, and a second screen covering the aperture of the frame;

conduit means for connecting the vaporizer conduit with said heat chamber;

a heat medium within said heat chamber, the vaporizer conduit and said conduit means;

heat means for heating the heat medium within said heat chamber;

first pump means for moving fuel from said fuel chamber to the carburetor; and

second pump means for circulating said heat medium through said heat chamber, the vaporizer conduit, and said conduit means.

4,342,304
CONTACTLESS IGNITON CIRCUIT FOR INTERNAL COMBUSTION ENGINES

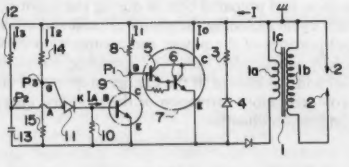
Hiromi Watanabe, Yokosuka, Japan, assignor to Oppama Kogyo Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 2, 1980, Ser. No. 164,508

Claims priority, application Japan, Dec. 1, 1979, 54-156119

Int. Cl.³ F02P *3/08*

U.S. Cl. 123—599 **1 Claim**



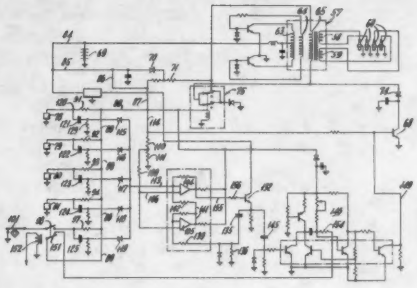
1. A contactless ignition circuit for an internal combustion engine having a coil assembly including a primary winding, said cirucit comprising a power transistor, a small signal transistor, a programmable unijunction transistor, a first potential dividing circuit and a second dividing circuit, said power transistor having a collector and emitter connected respectively to the ends of the primary winding, said small signal transistor having a collector connected to the base of said power transmitter and via a resistance to one end of said primary winding, and an emitter connected to the other end of said primary winding, said programmable unijunction transistor having a cathode connected to the base of the signal transistor and an anode and gate connected respectively to said first and second potential dividing circuit, said first and second potential driving circuit being connected in parallel with said primary winding, said first potential dividing circuit consisting of a resistance and capacitor, said second dividing circuit consisting of two resistances.

4,342,305

IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE EMPLOYING FUEL INJECTION

Robert E. Canup, Poughkeepsie, and Martin Alperstein, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 48,867, Jun. 15, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 200,753
Int. Cl.[3] F02B *15/00*; F02M *63/06*
U.S. Cl. 123—617 6 Claims



1. In combination with an internal combustion engine employing fuel injection and including a high tension electric spark to ignite a combustible mixture of said injected fuel,

a plurality of fuel injection valves each having an electrically conductive material plunger in seating contact with an electrically conductive material body of each valve when closed,

said plungers being actuated by fuel pressure to open the valves,

ignition breaker points being engine actuated to open after each of said fuel injection valves when operating normally,

first electrical circuit means for connecting a resistor in series with each of said plungers and with said breaker points,

a first and second comparator each having two inputs and an output,

second circuit means for connecting a predetermined EMF to one of each of said comparator inputs in parallel,

third circuit means comprising a diode in series with each of said plungers and said breaker points for maintaining electrical separation thereof,

said third circuit means connecting said plungers and said breaker points to the other input of said first comparator,

said first comparator output providing a signal to initiate said electric spark whenever any of said plungers are actuated by the fuel pressure or said breaker points are actuated, and

time delay means connected to said first comparator output for maintaining said signal for a predetermined time duration,

said time delay means comprising

an RC circuit,

said second comparator,

fourth circuit means for connecting said RC circuit between said first comparator output and the other input of said second comparator, and

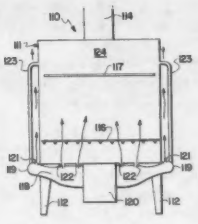
fifth circuit means for connecting the output of said second comparator to said other input of said first comparator.

4,342,306

WOOD STOVE WITH SAFETY FORCED AIR SYSTEM

Robert D. Thulman, 10596 E-1 Twin Rivers Rd., Columbia, Md. 21044, and Alve J. Erickson, 17 Pleasant St., Milford, N.H. 03055

Filed Aug. 16, 1979, Ser. No. 67,202
Int. Cl.[3] F02B *75/16*
U.S. Cl. 126—61 23 Claims



1. A high-efficiency safety stove for burning solid fuels comprising:

(a) a firebox having at least one exterior single-wall exposed to the space to be heated;

(b) means for introducing a solid fuel into said firebox;

(c) means for exhausting combustion gases from said firebox;

(d) primary air introducing means for admitting combustion air into said firebox;

(e) forced air flow means for directing a flow of room air across at least said one exposed single-wall of said firebox;

(f) supplemental air inlet means for diverting a portion of the air from said air flow means into said firebox;

(g) fan means for forcing room air through said air flow means and through said supplemental air inlet means;

(h) said firebox being constructed such that substantially all of the combustion air must enter the firebox through said primary air introducing means or through said supplemental air inlet means;

(i) the maximum sizing of said primary air introducing means being sufficiently small that if the fan means stops, the rate of combustion in the firebox will be automatically reduced to maintain the temperature of the stove at a safe level; and

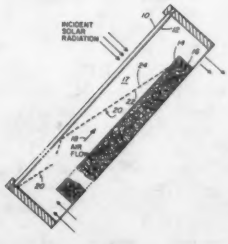
(j) means for controlling the amount of air introduced into said firebox through said primary air introducing means.

4,342,307

SOLAR COLLECTOR FOR HEATING AIR

John W. Tuck, 01 Squam Hill Ct., Rockport, Mass. 01966

Filed Dec. 10, 1980, Ser. No. 215,018
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—449 5 Claims



1. In a solar collector for heating air or other gaseous medium and having a gas passage bounded on one side by a glazing layer arranged for exposure to the sun, and having an

energy absorbing and transferring element within said passage, the improvement in which said transfer element comprises

A. a screen of thermally conductive material apertured for the ready passage of the gaseous medium and disposed for solar illumination through the glazing layer and to intercept the flow of the gaseous medium along said passage, and

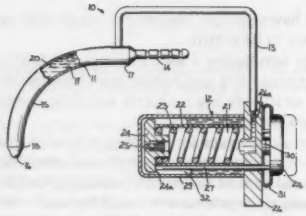
B. granules of mineral grit fixedly secured to said screen with substantially continuous distribution thereover, said granules being configured and arranged to provide said transfer element with a coarse-textured, energy-transferring surface of enhanced topographical area in which separate ones of said granules function substantially as separate energy-transferring elements.

4,342,308

PENILE ERECTILE SYSTEM

Robert E. Trick, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Filed Oct. 2, 1980, Ser. No. 193,526
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **2 Claims**



1. A penile erectile system includes:

(a) An elongated cylindrical penile inplant having a stem at one end, a conical tip at the other end, and a nondistensible chamber;

(b) a single stroke pump for pressurizing the nondistensible chamber, said pump including:

(i) an expanded collapsible pumping chamber,

(ii) a removable rod which prevents the chamber from being collapsed and maintains said pumping chamber in a normal expanded condition, and

(iii) means for collapsing the expandable pumping chamber to reduce its effective volume upon removal of said removable means; and

(c) tubing connecting the non-distensible chamber of the implant and the pumping chamber so that when the pump, implant and tubing are substantially filled with hydraulic fluid and the pumping chamber is collapsed, hydraulic fluid is forcibly displaced under pressure through the tubing to completely fill, pressurize and make rigid the non-distensible chamber of the implant.

4,342,309

BOW TYPE TRACTION DEVICE HAVING CORPOREAL INSERTION MEANS

Nas S. Eftekhar, 25 Paddock Rd., Hohokus, N.J. 07423

Filed Jan. 8, 1981, Ser. No. 223,288
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—84 R **11 Claims**

1. A traction device for providing skeletal traction application to a limb of a patient, comprising:

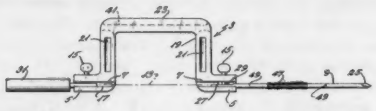
(a) an elongate traction pin, comprising a driven end and a distal end;

(b) a bow member comprising first and second end portions connected by a center portion, the end portions being aligned along a bow axis and the center portion extending between the two ends and away from the bow axis;

(c) an insertion channel in each of the end portions of the bow member, the insertion channels being adapted to receive the pin so that the center axis of the pin generally coincides with the bow axis; and

(d) a securing means associated with at least one of the end portions of the bow, the securing means being operable to prevent the pin from moving relative to the bow member when an end of the pin is in the end of the bow member having said securing means;

(e) a handle, the handle being fitted to one end of the bow at



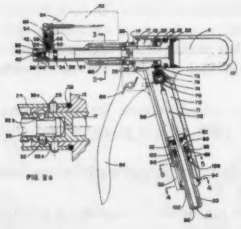
least when the other end of the bow is holding the driven end of the pin, wherein the bow may receive the driven end of the pin in one of the bow end portions and cooperate with with the pin and the handle to function as a bit and brace to insert the pin through the patient's limb with each end portion of the pin extending outside the patient's limb, and the bow may receive an end portion of the pin in each of the end portions of the bow to cooperate with the pin to effect traction on the limb by means of a conventional system of a cord, weight and pulley.

4,342,310

HYDRO-PNEUMATIC JET INJECTOR

Istvan Lindmayer, 4390 Gilles St., Pierrefonds, Prov. of Quebec, Canada (H9H 2N4), and Karim Menassa, 3035 Noorduyn, St. Laurent, Prov. of Quebec, Canada (H4R 1A1)

Filed Jul. 8, 1980, Ser. No. 167,395
Int. Cl.³ A61M *5/30*
U.S. Cl. 128—207.25 **9 Claims**



1. A jet injector for administering a fluid medicine through the skin comprising:

(a) an elongated tubular casing;

(b) handle means substantially perpendicular to said casing;

(c) plug means in said casing, said plug means dividing the interior of said casing into a medicine chamber and a compression chamber, said compression chamber containing a substance which is gaseous at normal room temperature and which converts to a liquid when subjected to pressure;

(d) an inlet duct in said casing for introducing medicine into said medicine chamber;

(e) a discharge orifice in said casing for discharging medicine from said medicine chamber into the skin;

(f) first piston means slidably mounted in said compression chamber for movement from a rest position toward said substance to a charged position, and away from said substance to the rest position;

(g) first rod means connected to said first piston means slidable in said plug means and extending into said medi-

cine chamber for drawing medicine into and discharging medicine from said medicine chamber;

(h) a charging chamber in said handle means containing a charging liquid;

(i) a pressure chamber between said plug means and said piston means for receiving liquid from said charging chamber for pressing the first piston means against the substance;

(j) second piston means in said handle means;

(k) trigger means connected to said casing for moving said second piston means against said charging liquid, whereby said charging liquid is caused to pass from said charging chamber into said pressure chamber to move said first piston means against the substance to the charged position for liquefying a portion of said substance, and to cause said first rod means to move partially out of said medicine chamber for drawing medicine into the medicine chamber;

(l) safety catch means in said handle means for locking said first and second piston means in the charged position, and for releasing said first and second piston means to cause said first rod means to force said medicine through said discharge orifice while the charging liquid is returned to the charging chamber.

4,342,311

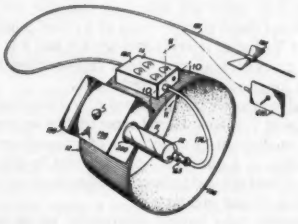
INJECTOR WITH PROGRAMMING MEANS

Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of Atlanta, Ga. 30327

Division of Ser. No. 1,091, Jan. 8, 1979, Pat. No. 4,273,112, which is a continuation-in-part of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, and Ser. No. 964,953, Nov. 30, 1978, Pat. No. 4,235,235. This application Mar. 27, 1981, Ser. No. 248,483

Int. Cl.³ A61M *5/20*

U.S. Cl. 128—214 F **4 Claims**



1. Fluid dispensing apparatus for injecting fluid into a patient at an average prescribed rate over a prolonged period of time comprising:

a container defining a fluid chamber therein carrying fluid to be dispensed and an outlet from said fluid chamber connected to the patient;

a piston slidably mounted in said fluid chamber for forcing fluid from said outlet as said piston is moved toward said outlet;

an electrical power supply;

electrically operated driving means for moving said piston toward said outlet when said electrically operated driving means is connected to said power supply; and

control means for selectively connecting said electrical power supply to and disconnecting said electrical power supply from said electrically operated driving means; said control means including switching means for selectively connecting said electrical power supply to said electrically operated driving means; timing pulse generator means for operating said switching means; programming means for selectively controlling the timing pulse rate output of said timing pulse generator; and mode selector means for selectively activating said programming means to permit adjustment said programming means to change the timing pulse rate output of said timing pulse generator means and for selectively causing said timing pulse generator means to generate the timing pulse rate output selected by said programming means while preventing adjustment of said programming means.

4,342,312

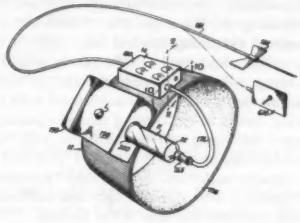
METHOD OF INJECTING FLUID

Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of Atlanta, Ga. 30327

Division of Ser. No. 1,091, Jan. 8, 1979, Pat. No. 4,273,112, which is a continuation-in-part of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, and Ser. No. 964,953, Nov. 30, 1978, Pat. No. 4,235,235. This application Mar. 30, 1981, Ser. No. 248,868

Int. Cl.³ A61M *5/20*

U.S. Cl. 128—214 F **1 Claim**



1. A method of injecting a fluid into a patient at an average prescribed rate over a prolonged period of time comprising the steps of:

alternatively injecting the fluid into the patient at a first prescribed rate greater than the desired average prescribed rate for a first prescribed short period of time of fixed duration much less than the prolonged period of time;

alternatively stopping the injection of the fluid into the patient for a second prescribed short period of time less than the prolonged period of time so that the fluid is injected into the patient at the desired average prescribed rate over the sum of the first and second prescribed short periods of time; and

selectively varying the duration of only the second prescribed short period of time without varying the duration of the first prescribed short period of time to selectively vary the selected prescribed average rate at which the fluid is injected into the patient.

4,342,313

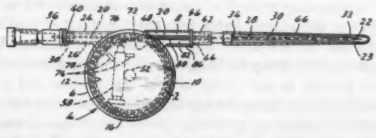
CATHETER INSERTION DEVICE

Richard M. Chittenden, Grayslake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 23, 1981, Ser. No. 237,319

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214.4 **15 Claims**



1. An improved catheter insertion device comprising:

a catheter dispenser having a base with a catheter outlet extending therefrom and a catheter receptacle including

an outwardly facing wall for receiving a catheter therewithin, the dispenser including means engaging the base and receptacle in rotating relation, said catheter being in mechanical engagement with said catheter receptacle whereby rotation of said catheter receptacle relative to said base causes said catheter to be threadably moved through said outlet;

a tubular housing having an axial bore therethrough tangentially extending from said catheter dispenser in coaxial alignment with said catheter outlet;

elongate piercing means having a sharpened tip, coaxially disposed through said tubular housing and extending through and beyond said catheter outlet for the performance of venipuncture;

a hub member affixed to the proximal end of said elongate piercing means constructed and arranged for mating engagement with the distal end of said tubular housing, facilitating the slidable removal of said elongate piercing means from said catheter dispenser; and

a cannula member generally contiguously and telescopically surrounding the distal portion of said elongate piercing means and extending beyond said catheter outlet proximate to said sharpened tip, the proximal end of said cannula being in fluid-tight connection to said catheter outlet;

said cannula being operatively associated with said elongate piercing means in performing said venipuncture;

whereupon following said venipuncture, said elongate piercing means may be slidably removed from said cannula and said catheter outlet and said catheter thereupon telescopically inserted into and through said catheter outlet and cannula and into the vein of the patient.

4,342,314

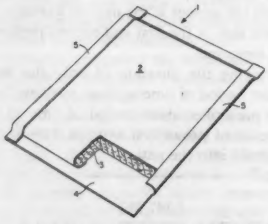
RESILIENT PLASTIC WEB EXHIBITING FIBER-LIKE PROPERTIES

Clifford J. Radel, Cheviot, and Hugh A. Thompson, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 17,506, Mar. 5, 1979, abandoned. This application Nov. 13, 1980, Ser. No. 206,410

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—287 **37 Claims**



1. A resilient three-dimensional web exhibiting a fiber-like appearance and tactile impression and comprised of fluid-impervious plastic material, said web having first and second surfaces, said first surface having a multiplicity of apertures therein, each of said apertures being defined by a multiplicity of intersecting fiber-like elements interconnected to one another in the plane of said first surface, each of said fiber-like elements further exhibiting a substantially uniform U-shaped cross-section along its length, said cross-section comprising a base portion in said plane of said first surface and a sidewall portion joined to each edge of said base portion, said sidewall portions extending generally in the direction of said second surface of said web, said intersecting sidewall portions being interconnected to one another intermediate said first and said second surfaces of said web, said interconnected sidewall portions terminating substantially concurrently with one another in the plane of said second surface.

4,342,315

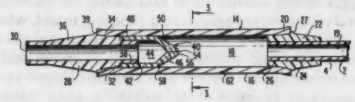
SUCTION CATHETERS WITH IMPROVED SUCTION CONTROL VALVE

Isaac S. Jackson, Greenwich, N.Y., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed May 10, 1979, Ser. No. 37,878

Int. Cl.³ A61M *25/00, 1/00*

U.S. Cl. 128—349 R **8 Claims**



1. A suction catheter assembly with a lumen having a proximal end, a ported distal end, a suction control valve assembly portion connected to the proximal end of the catheter, said suction control valve assembly comprising:

an elongated flexible tube having a proximal end, a distal end and a lumen larger than the lumen of the catheter connected to said valve,

means connecting the distal end of said flexible tube to the proximal end of said catheter,

a rigid connector member having a proximal end, a distal end and a lumen smaller than the lumen of said flexible tube fitted into the proximal end of said flexible tube with its distal end positioned within and its proximal end positioned without said flexible tube,

the distal end of said rigid connector member bearing an integral nipple, and

a valve member comprising a proximal tubular portion having a lumen larger than the lumen of said rigid connector member, but smaller than the lumen of said flexible tube, and a closed distal portion integral with the proximal tubular portion,

the free end of said proximal tubular portion being fitted over said nipple and extending into said flexible tube,

said closed distal portion being of a chisel point design having a V-shaped lateral cross-section and a U-shaped anterior cross-section, said lateral cross-section having a median longitudinal slit therethrough,

said valve member being formed of resilient material permitting said V-shaped lateral cross-section to be parted along said median slit by application of pressure upon said valve member in a direction perpendicular to the longitudinal axis of said slit and to be restored to its close position upon release of said pressure,

said flexible tube having protrusions on its outer surface positioned on said axis of said median slit to serve as indicators for application of pressure to open said valve member.

4,342,316

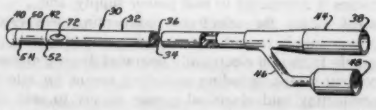
ZERO STASIS CATHETER

Philip Rosenberg, Gurnee, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 6, 1981, Ser. No. 280,741

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—349 B **14 Claims**



1. A catheter, comprising:

an elongated shaft having an inflation lumen extending along the shaft, and a drainage lumen extending through the shaft, said catheter having a proximal end, a distal end, and a distal end portion;

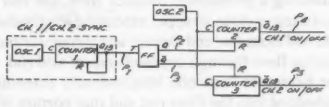
an elastic sleeve on the distal end portion of the catheter and having opposed ends; and

means bonding the sleeve to said distal end portion in spaced circumferential zones adjacent the opposed ends of the sleeve and along longitudinal lines at least a substantial distance between said zones on opposed sides of said distal end portion, said catheter having an inflation opening beneath the sleeve communicating with the inflation lumen, and at least one drainage eye proximal the sleeve and communicating with the drainage lumen.

4,342,317
METHOD OF ELECTRICAL MUSCLE STIMULATION FOR TREATMENT OF SCOLIOSIS AND OTHER SPINAL DEFORMITIES

Jens Axelgaard, Downey, Calif., assignor to The Professional Staff Association of the Rancho Los Amigos Hospital, Inc., Downey, Calif.

Filed Apr. 1, 1980, Ser. No. 136,310
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—421 **17 Claims**



1. A method of treating spinal curvature deformities in patients comprising the steps of:

(a) locating a reference center on the major curve to be treated;

(b) locating muscle site pairs surrounding said reference center such that, when one muscle site is stimulated electrically in accordance with a selected pulse pattern, no stimulation of the other muscle site occurs;

(c) positioning two pairs of electrodes generally symmetrically about said reference center on the convex side of said major curve at a trunk location determined by the type of curve noted for stimulation of said muscle sites;

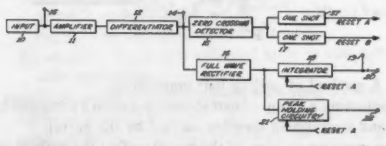
(d) repetitively applying a first selected electrical pulse pattern to one pair of said electrodes sufficient to evoke contraction and relaxation of one of said muscle sites; and

(e) alternatively repetitively applying a second selected electrical pulse pattern to the other pair of said electrodes for contraction and relaxation of the other of said muscle sites whereby one of the muscle sites is always in contraction to thereby apply a constant corrective force on the spinal curvature.

4,342,318
PHYSIOLOGICAL WAVEFORM PROCESSOR

William R. Engle, Blaine, Minn., and Ronald H. Rockland, Parsippany, N.J., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 25, 1980, Ser. No. 180,710
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—708 **9 Claims**



1. Apparatus for processing waveform signals of physiological origin including input means for receiving said waveform signals, said apparatus comprising:

first means operatively connected to said input means for developing a signal representative of the peak-to-peak amplitude between each waveform signal peak and the next successive waveform signal peak;

second means operatively connected to said input means for developing a signal representative of the maximum slew rate of said waveform signal between successive waveform signal peaks, said first and second means each comprising resettable memory means;

third means operatively connected to said input means and said first and second means for generating a memory means reset signal on the occurrence of a sign change in the slope of said waveform signal;

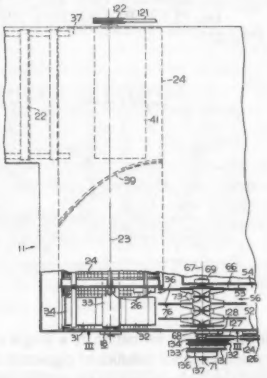
fourth means connected to receive said first means signal including memory means for storing said first means signal, said fourth means further comprising means for blocking all first means signals from said fourth means memory means which do not exceed the last signal stored in said memory means;

fifth means connected to receive said second means signal including memory means for storing said second means signal; and p1 means for gating said second means signal to said fifth means memory means, said fifth means including means for enabling said gating means only on the occurrence of a first means signal that exceeds the last first means signal stored in said memory means.

4,342,319
COMBINED CHOPPER AND IMPELLER FOR AN AXIAL FLOW COMBINE

Billy B. Willis, and L. Michael Fetters, both of Independence, Mo., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 29, 1980, Ser. No. 220,355
Int. Cl.³ A01F *12/40*
U.S. Cl. 130—27 R **7 Claims**



1. An axial flow combine having a foraminous cylindrical cage whose axis is transverse to the direction of travel of the combine during a harvesting operation having a rearward facing, radial discharge opening adjacent one axial end and a rotor within and generally coextensive and coaxial with the cage including a discharge paddle at the end thereof registering generally with the discharge opening in the cage whereby the paddles centrifugally impel crop material rearwardly through the discharge opening, said combine further characterized by:

top, bottom and side walls defining a longitudinally extending passageway between said discharge opening in said cage and a downward facing discharge opening at the rear end of the combine, and

a chopper mounted on said combine at the entrance of said passageway adjacent said cage discharge opening for

rotation about a transverse axis and having a plurality of radially extending knives disposed at axially spaced intervals across the transverse width of said passageway, said chopper rotating in the same direction as said rotor whereby said knives strip crop material from said paddles, chop it and impel it rearwardly to said rear end discharge opening.

4,342,320

CIS-10, 10-DIMETHYL-TRICYCLO (7.1.1.0^{2,7}) UNDEC-2-EN-4-ONE AND USE THEREOF AS PERFUMING AND FLAVORING INGREDIENT

Alan F. Thomas, Nyon, Switzerland, assignor to Firmenich, S.A., Geneva, Switzerland

Division of Ser. No. 112,928, Jan. 17, 1980, Pat. No. 4,307,122, which is a division of Ser. No. 969,583, Dec. 14, 1978, Pat. No. 4,226,745. This application May 28, 1981, Ser. No. 267,757

Claims priority, application Switzerland, Jan. 13, 1978, 360/78

Int. Cl.^{3} A24B *3/12, 15/30, 15/34*

U.S. Cl. 131—276 **2 Claims**

1. A tobacco product which comprises having added thereto cis-10,10-dimethyl-tricyclo[7.1.1.0^{2,7}]undec-2-en-4-one.

4,342,321

DEVICE FOR THE FORMATION OF GROUPS OF CIGARETTES

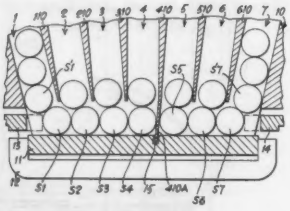
Antonio Zullo, Bologna, Italy, assignor to CIR S.p.A. Divisione Sasib, Bologna, Italy

Filed Jan. 13, 1981, Ser. No. 224,645

Claims priority, application Italy, Jan. 25, 1980, 12421 A/80

Int. Cl.^{3} A24C *5/32, 5/33, 5/352*

U.S. Cl. 131—282 **3 Claims**



1. A device for the formation of a single row of cigarettes having a predetermined number of cigarettes therein, the cigarettes in said row being side-by-side and having their longitudinal axes parallel to each other, comprising

a feeding hopper subdivided by partition walls into a plurality of adjacent passageways, the number of said passageways being equal to said predetermined number of cigarettes in said row; and

a collecting chamber, said collecting chamber including a bottom plate positioned below said plurality of passageways and side pushers located above and at each end of said bottom plate, one of said partition walls being centrally located within said hopper and having an end secured to said bottom plate to prevent movement of said partition in a direction transverse to the longitudinal axes of said cigarettes, and the remaining partition walls each having an end extending to a distance from said bottom plate which is slightly greater than the diameter of said cigarette, whereby each of said passageways feeds a single file of superposed cigarettes into said collecting chamber.

4,342,322

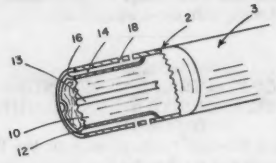
CIGARETTE FILTER

Robert A. Sanford, Prospect, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Dec. 22, 1980, Ser. No. 219,132

Int. Cl.^{3} A24D *3/04, 3/00*

U.S. Cl. 131—336 **9 Claims**



1. A filter for a cigarette comprising:

a porous filter rod of cylindrical configuration having a longitudinally extending tube centrally disposed therein extending a preselected distance from one end thereof;

a smoke impervious wrapper extending longitudinally along said rod from one end thereof and circumscribing said rod leaving flow-through opposed ends of said rod, said wrapper having at least one longitudinally extending groove embedded into the filter rod and that portion of the wrapper defining the groove remaining smoke impervious, said groove being open ended at and extending from one of said ends a distance less than the length of the filter rod; and,

tipping material extending longitudinally of and circumscribing said wrapper, said tipping material being air pervious and permitting ventilating air flow therethrough into said groove, said ventilating air being the only fluid flowing through said groove when the filter is used in combination with a cigarette during normal smoke draw.

4,342,323

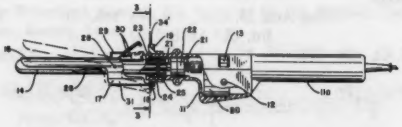
HAIR STYLING APPARATUS AND TECHNIQUES

Randy L. Rick; Paul F. Mazzotta, and Cosimo D. Daiello, all of Reading, Pa., assignors to Shearpower International Corporation, Reading, Pa.

Division of Ser. No. 972,356, Dec. 22, 1978, Pat. No. 4,267,431. This application Dec. 24, 1980, Ser. No. 220,124

Int. Cl.^{3} A45D *7/00*

U.S. Cl. 132—37 R **2 Claims**



1. A method of curling hair comprising:

positioning a group of hair strands between a rotatable barrel and a wrapping member carried by the barrel;

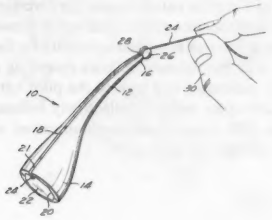
commencing rotation of the barrel so that the desired length of hair is wrapped about the barrel; and

moving the wrapping member cyclically as the barrel is rotated so that the wrapping member alternately urges the hair against the barrel and relaxes its urging of the hair against the barrel.

4,342,324
DENTAL FLOSSING FINGER

Paul E. Sanderson, 12 Rue Grand Vallee, Newport Beach, Calif. 92660

Continuation of Ser. No. 13,744, Feb. 21, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,483
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—92 R 3 Claims



1. A holder and applicator for dental floss comprising in combination:

a single unitary elongated applicator body member having (a) proximal and distal ends, (b) a generally circular cross section which smoothly diminishes in area between said proximal and distal ends, and (c) a streamlined exterior wall having a substantially continuously even surface forming a convex curve on one side of said body member and a concave curve on the opposite side of said body member, said proximal end forming an enlarged base for setting said holder and applicator upright when it is not being used so as to maintain the floss in a sanitary, unsoiled condition;

said body member having a generally cylindrical hollow recess formed in said proximal end for retaining a cartridge of dental floss;

anchoring means located at the distal end of said body member, said anchoring means comprising (a) an enlarged knob integral to said body member located at the extreme end of said body member and (b) a neck portion of smaller radius at the base of said knob around which the dental floss is easily wrapped for temporarily anchoring said floss at the distal end of said body member and leaving a loose end of floss hanging freely from said distal end for flossing teeth; and floss pathway means comprising:

(a) a longitudinal open slot in the convex curved side of the exterior surface of said body member and extending the length thereof,

(b) a slot in the wall of the proximal end of said body member so that said hollow recess is in direct communication with said longitudinal slot, and

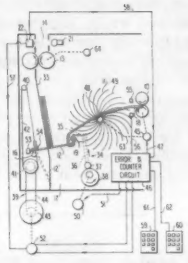
(c) an open slot in said enlarged knob in communication with said longitudinal slot;

said floss pathway means formed providing a defined, protected and easily threaded pathway for floss from (a) said point of egress of the floss to the exterior wall of said body member to (b) said anchoring means so that the user of said holder and applicator need only withdraw a length of floss from said point of egress, lay said length of floss into said open longitudinal slot, lay said floss into said open slot in said enlarged knob, and anchor the floss around said neck portion of said anchoring means.

4,342,325
DISPENSING APPARATUS

Leif J. I. Lundblad, Haradsvagen 102, S-141 41 Huddinge, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 950,108, Oct. 10, 1978, abandoned. This application Apr. 4, 1980, Ser. No. 137,189
Claims priority, application Sweden, Oct. 11, 1977, 7711413
Int. Cl.³ B65H *3/44*
U.S. Cl. 133—1 R 3 Claims

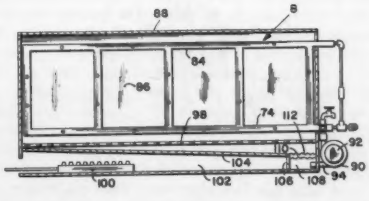


1. An apparatus for feeding a given number of sheet-like elements from a store of such elements to a receipt opening, comprising: an element-dispensing control means; first, second and third element-conveying means having respective drive means electrically connected to said control means for controlling the respective operating sequences of said drive means, said second conveying means being movable towards and away from said third conveying means; and counter means for counting the number of elements dispensed from said store in response to an ordered number of said elements, wherein the drive means of the first conveying means is arranged, in cooperation with said control means, to dispense a given number of sheet-like elements to the second conveying means in dependence upon the absence of a previously dispensed bundle of elements on the second conveying means but independent of the presence or absence of a previous conveyed bundle of elements in the receipt opening; and wherein the drive means of the second conveying means is arranged, in cooperation with said control means, to transfer the elements to said third conveying means in dependence upon the absence of a previously further conveyed bundle of elements in the receipt opening, whereby feeding of said sheet-like elements from said store to said second conveying means can commence during that time in which a previously conveyed bundle of said elements still remains in the receipt opening, thereby enabling the dispensing procedure to be considerably expedited.

4,342,326
HIGH SPEED STRIPPING APPARATUS

Paul L. Meier, Strip-Ease, Inc., Hwy. 17, Martin, Ga. 30557

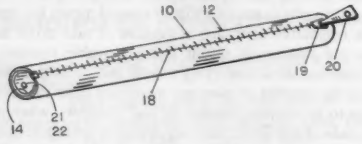
Filed Jan. 30, 1981, Ser. No. 230,002
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—102 4 Claims



1. A stripping apparatus comprising an enclosure, an array of

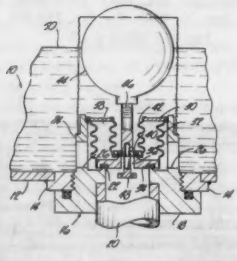
elongated tubes located within the enclosure, said tubes having side walls with a plurality of nozzles in the side walls arranged to deliver liquid solvent from the interior of the tubes to the space outside of the tubes but within the enclosure, means for collecting liquid solvent at the bottom of the enclosure, pump means, having an intake in communication with the collecting means and an outlet in communication with the array of tubes, for delivering liquid solvent collected at the bottom of the enclosure to the interiors of the tubes in the array, at least one of the elongated tubes in the array having an additional internal tube with a series of transverse pin-hole openings, said internal tube being positioned within said one of the elongated tubes and being spaced from the side walls thereof so that a space for flow of liquid solvent surrounds the internal tube substantially completely, and so that each pin-hole opening is in register with one of the nozzle openings of said one of the elongated tubes, and means for supplying compressed air to said internal tube, whereby blasts of compressed air from said pin-hole openings are directed through said nozzle openings and project fine liquid solvent droplets from said nozzle openings at high velocity.

4,342,327
TAPE STRUT AND TAPE STRUT TENT
Ming-Shean Ueng, 3410 Hayes St., Hollywood, Fla. 33021
Filed Oct. 18, 1979, Ser. No. 86,051
Int. Cl.³ A45F *1/00*
U.S. Cl. 135—1 R **21 Claims**



1. A tape strut comprising at least a tape and at least a zipper, means of combination of said tape and said zipper, means of attaching of said tape onto said zipper while in use and means of storage of said tape and said zipper while not in use, said zipper forming a closed loop around said tape in cross section while in use so that said tape strut being able to be used to take load as a structure tubing.

4,342,328
TWO STAGE FLOAT VALVE
Galal N. Matta, Sterling Heights, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jun. 16, 1977, Ser. No. 806,978
Int. Cl.³ F16L *43/00*; F16K *31/18*
U.S. Cl. 137—135 **3 Claims**

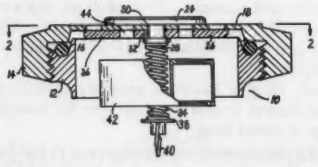


1. In a vehicle having a liquid fuel tank whose bottom wall (12) is connected to a downwardly-extending suction tube (20): the improvement comprising means defining a main valve seat (22) located at the upper end of the suction tube; a main poppet valve element (34) disposed above the main seat for movement toward or away therefrom to control fuel flow thereacross; a stationary end wall (30) located above the valve seat; a first outer imperforate bellows 32 extending downwardly from said end wall to the main valve element;

said main valve element having a pilot port (36) therethrough; a liquid-level responsive float (44) located within the fuel tank directly above the stationary end wall; a pilot valve element (40) rigidly connected to the float for opening the pilot port when the liquid level in the tank rises above a predetermined low value; valve lifter means (48) carried by the pilot valve element for forcible engagement with an undersurface of the main valve element when the pilot valve element is moved upwardly by the float; and a second inner imperforate bellows extending downwardly from the stationary end wall to the pilot valve element;

the inner and outer bellows collectively forming an annular chamber (38) whose sole communication with the fuel tank is through the pilot port.

4,342,329
BREATHER VALVE
Robert W. Roff, 15B Jetty Rd., Toora, Victoria, Australia
Filed Aug. 26, 1980, Ser. No. 181,536
Int. Cl.³ F16K *17/26*
U.S. Cl. 137—202 **6 Claims**



1. A breather valve for a closed liquid tank, said liquid tank having a tank wall, said valve comprising:

an outer valve member shaped as an essentially flat disc and having an axial stem centrally depending therefrom through stem guide means, said stem guide means being formed in said tank wall so that said stem is slidable therethrough along its axis; said outer valve member being adapted to selectively cover and uncover at least a first aperture in said tank wall, said first aperture being concentric with respect to said central stem;

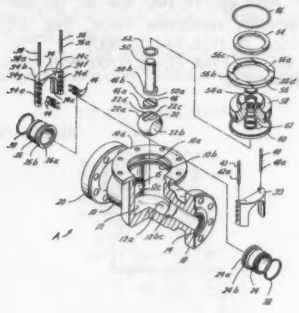
an inner valve member shaped as an essentially flat disc, said inner valve member having valve member guide means in the plane of said disc facilitating slidable movement of said inner valve member along said axis of said stem, said inner valve member also having in the plane of said disc at least one registering aperture aligned with said first aperture in said tank wall, said inner valve member being adapted to selectively cover and uncover at least a second aperture in said tank wall, said second aperture being concentric with respect to said central stem; and,

biasing means including a spring held captive between a free end of said stem and an innermost face of said inner valve member to resiliently bias said valve members together.

4,342,330
BALL TYPE VALVE HAVING IMPROVED REDUNDANT SEALING SYSTEM

Raymond Wieveg, Los Angeles, Calif., and Julian D. Keithahn, Houston, Tex., assignors to Hydril Company, Los Angeles, Calif.

Filed Aug. 18, 1980, Ser. No. 178,871
Int. Cl.³ F16K *43/00, 5/20*
U.S. Cl. 137—315 **2 Claims**



1. A valve apparatus having an improved sealing system for providing enhanced access to the valve seals for maintenance operations, including:

a valve housing having a cavity forming a central flow path defining a longitudinal axis, said central flow housing forming at one end of said flow path an inlet opening for receiving a flow of fluid and disposed at the other end of said flow path, an outlet opening for exhausting the flow of fluid, said housing having means adjacent said inlet opening and said outlet opening for connecting said housing in flow containing communication with associated flow conduits, said inlet opening and said outlet opening located on the longitudinal axis at opposite ends of housing, an access opening formed in said valve housing for enabling maintenance operations in said cavity without disconnecting said valve housing from flow containing communication with the associated flow conduits;

a substantially spherical flow closure element having a flow passage formed therethrough, said closure element disposed in said cavity forming said central flow path between said inlet and said outlet for rotational movement to and from an opened position with said flow passage aligned with said central flow path to enable flow of fluid and a closed position with said flow passage disposed transversely to said central flow path for blocking passage of fluid through said central flow path, said spherical flow closure element arranged for limited floating movement in said cavity along said longitudinal axis;

seat means disposed in said central flow path on opposite sides of and in sealing engagement with said flow closure element for blocking leakage of fluid therebetween, said seat means including a first seat ring disposed on one side of said flow closure element and a second seat ring disposed the other side of said flow closure element, said first and second seat rings concentrically positioned on the longitudinal axis and arranged for reciprocating movement therealong for maintaining sealing engagement with said flow closure element;

means disposed in said cavity operably connecting said seat rings means for retaining said seat rings in sealing engagement with said spherical flow closure element, said means for retaining being installable and removable through said access opening;

a crank extending from said valve housing and operably connected with said spherical flow closure element for providing the rotational movement to and from the open and closed positions;

a plug removably mountable within said cavity of said housing for substantially filling said access opening for enclosing said cavity, said plug having an opening through which said crank extends, said access opening dimensioned to enable passage of said flow closure element and said seat means and said means for retaining said seal rings for maintenance purposes when said plug is removed;

means for releasbly securing said plug with said housing;

means for sealing said plug with said housing to block leakage of fluid therebetween; and

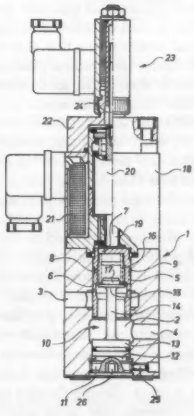
means for sealing between said crank and said plug to block leakage of fluid therebetween, wherein flow of fluid through said flow path is controlled;

wherein said plug removably mounted within said cavity of said housing by a segmented securing ring received in an annular groove formed by said housing, said segmented securing ring held in said annular groove by a securing ring.

4,342,331
HYDRAULIC CONTROL- AND/OR MEASURING DEVICE, PARTICULARLY SOLENOID-CONTROLLED FLOW REGULATING VALVE

Reiner Bartholomäus, Neuendorf, and Hans Wölfges, Lohr, both of Fed. Rep. of Germany, assignors to Die G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Jan. 14, 1981, Ser. No. 225,967
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001886
Int. Cl.³ F16K *37/00, 39/00*
U.S. Cl. 137—553 **10 Claims**



1. A hydraulic control- and/or measuring device, particularly an electrically controlled flow regulating valve, having a housing formed with a cylindrical bore and a control edge; a socket-shaped control slider defining an axial blind bore and another control edge cooperating with said first-mentioned control edge; the slider being movable in said cylindrical bore between an open position and a closed position; a biasing spring for engaging one end of said slider; actuation means arranged in said housing for adjusting the position of said slider; pick-up means coupled to said slider for detecting its position; a stationary jet intercepting member projecting into said blind bore and having a deflecting member extending over a major part of the inner cross section of said blind bore; said another control edge in the closed position of said slider being located at the level of said deflecting member and at the beginning of the open position of said slider said deflecting member

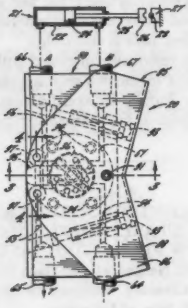
being situated between said another control edge and the bottom of said blind bore.

4,342,332

THREE-POSITION, FOUR-WAY ROTARY VALVE

Ellsworth W. Lapp, c/o Lapp Engineering, Inc., 4701 Hydraulic Rd., Rockford, Ill. 61109

Filed Aug. 21, 1980, Ser. No. 179,954
Int. Cl.[3] F16K *11/02*
U.S. Cl. 137—625.23 8 Claims



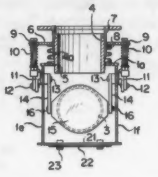
1. A three-position, four-way rotary valve comprising a housing defining a chamber, a pressure port, a drain port and first and second outlet ports all formed in said housing and opening into said chamber, said pressure port and said outlet ports being spaced around a circle with said outlet ports being located on opposite sides of said pressure port and being spaced equidistantly from said pressure port, a valve member rotatably mounted in said chamber and rotatable in one direction from a neutral position to a first active position and in the opposite direction from said neutral position to a second active position, and means formed in said member and located to establish communication (a) between said pressure port and said first outlet port and also between said drain port and said second outlet port when said valve member is rotated in said one direction from said neutral position and through a predetermined angle of less than 45 degrees to said first active position, and (b) between said pressure port and said second outlet port and also between said drain port and said first outlet port when said valve member is rotated in the opposite direction from said neutral position and through the same predetermined angle to said second active position, said means comprising first and second openings formed in said valve member and adapted to communicate with said pressure port and with said first outlet port, respectively, when said valve member is in its first active position, a first passage formed in said valve member and establishing communication between said first and second openings, a third opening formed in said valve member and adapted to communicate with said second outlet port when said valve member is in its first active position, a second passage formed in said valve member and establishing communication between said third opening and said chamber, fourth and fifth openings formed in said valve member and adapted to communicate with said pressure port and with said second outlet port, respectively, when said valve member is in its second active position, a third passage formed in said valve member and establishing communication between said fourth and fifth openings, a sixth opening formed in said valve member and adapted to communicate with said first outlet port when said valve member is in its second active position, a fourth passage formed in said valve member and establishing communication between said sixth opening and said chamber, said first, second, fourth and fifth openings being spaced from one another around a circle with the angular spacing between said first and fourth openings being different from the angular spacing between said second and fifth openings and with the angular spacing between said first and second openings being equal to the angular spacing between said fourth and fifth openings.

4,342,333

EXHAUST GAS CHANGE-OVER APPARATUS

Tadatoshi Mizuno, Tokyo; Sumihiro Hosotani, Yokohama, and Kaoru Nishihara, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 21, 1980, Ser. No. 180,384
Claims priority, application Japan, Aug. 27, 1979, 54-116748[U]; Sep. 18, 1979, 54-128116[U]
Int. Cl.[3] F16K *11/02, 51/00;* B60P *1/00*
U.S. Cl. 137—625.44 2 Claims



1. A change-over apparatus of exhaust gas for use with a vessel of a dump truck having an exhaust pipe connected to an engine of the dump truck, said vessel having a plurality of hollow ribs integrally formed therewith, said change-over apparatus comprising:

a box-like housing having a first inlet for exhaust gas formed in a first wall thereof, a first outlet for the exhaust gas formed in a second wall thereof and a second outlet for the exhaust gas formed in a third wall thereof, said second and third walls being arranged at right angles with each other;

a first pipe mounted in said first outlet and open to the atmosphere;

a second pipe mounted in said second outlet;

a third pipe telescopically mounted on said second pipe, said third pipe having a flange fixedly secured thereto and being connectible with the hollow ribs of said vessel when said vessel is in its carry position;

shutter means for selectively closing said first and second pipes, said shutter means being pivotally mounted to a fourth and a fifth walls of said housing, said fourth and fifth walls being opposed against each other;

a pair of means each operatively associated with said shutter means for causing said shutter means to selectively close said first and second pipes; and

first spring means disposed between the flange of said third pipe and said third wall for biasing said third pipe toward its raised position thereby urging said shutter means to close said second pipe; whereby said third pipe is movable between said raised position and a lowered position where said vessel is contacted with top end of said third pipe and said shutter means is urged to close said first pipe;

each of said pair of means comprising

a rod having one end loosely connected with said flange and movable therein,

a link pivotally connected with the other end of said rod,

a support shaft fixedly connected with said link and inserted for rotation in said fourth or fifth wall of said housing thereby allowing said link to pivot at said support shaft,

a lever having one end fixedly connected with said support shaft and the other end pivotally connected with said shutter means, and

second spring means mounted on said rod, compressed between said flange and an abutment on said rod for urging said shutter means to close said first pipe when said third pipe contacts with said vessel and is lowered thereby, and to close said second pipe when said third pipe moves

toward its raised position, so as to bring selectively said shutter means into close contact with either one of said first and second pipes, without causing any clearance therebetween, and thereby ensuring the prevention of leakage of the exhaust gas.

4,342,334

HYDRAULIC SERVO VALVE

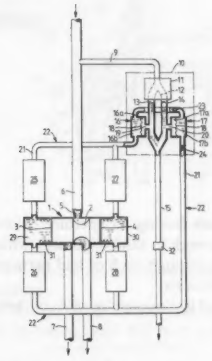
James E. Stangroom, Castleton, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 23, 1980, Ser. No. 143,147

Claims priority, application United Kingdom, May 15, 1979, 7916838

Int. Cl.³ F16K *11/07*

U.S. Cl. 137—625.48 **5 Claims**



1. A hydraulic servo valve having an adjustable control valve means for controlling the flow of a pressurized primary fluid from a source thereof comprising:

a sealed pilot circuit of electroviscous fluid having pressure transmitting means for transmitting the pressure of said electroviscous fluid thereby responsively adjusting said control valve, and electrically controlled valve means for varying the electroviscous fluid pressure at said transmitting means; and

a pumping means driveable by the primary fluid for circulating the electroviscious fluid within said sealed pilot circuit including:

a fluidic oscillator operatively connected to said primary fluid source for alternately directing a portion of said primary fluid to flow through two outlet flow lines;

first and second coupling means operatively associated with each of said two outlet flow lines for communicating fluid pressure of the primary fluid flowing in each of said two outlet flow lines to the electroviscous fluid in said pilot circuit; and

one-way flow means located in said pilot circuit intermediate said first and second coupling means for only allowing unidirectional flow of electroviscous fluid through said pilot circuit.

4,342,335

HYDRAULIC VALVE DETENT MECHANISM

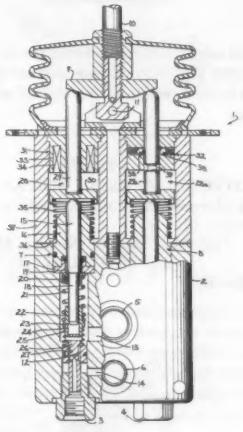
Donald C. Reinicker, Waukesha, and Daniel J. Radcliffe, Menomonee Falls, both of Wis., assignors to Koehring Company, Brookfield, Wis.

Filed Oct. 23, 1980, Ser. No. 199,816

Int. Cl.³ F16K *11/14, 31/00*

U.S. Cl. 137—636.2 **1 Claim**

1. An improved detent mechanism for a lever operated hydraulic valve having a casing with first and second work ports; first and second valve means disposed to open and close the respective first and second work ports; first and second operating plunger members mounted for movement in the casing and engageable with first and second valve means; a lever pivotally connected to the casing and operably engaging the outer ends of the operating plunger members to allow pivotal movement of the lever in one direction to cause one of the operating plunger members to move inwardly toward a first position to operate the respective valve means and allows freedom of outward movement for the other operating plunger member toward a second position; the improvement comprising a first biasing member engaging the first operating plunger member to urge the first operating plunger member toward its second position; first detent means releasably engaging the first



operating plunger member at its second position; a second biasing member engaging the second operating plunger member to urge the second operating plunger member toward its second position; second detent means for releasably engaging the second operating plunger member at its second position, said pivotal movement of the lever permits movement of one of the operating plunger members to its first position for opening one of the ports while the other operating plunger member is simultaneously moved independently of its associated valve means to its second position by its respective biasing member, and said other operating plunger member engages its respective detent means to establish a detent condition to hold the stroked operating plunger member and said lever in its operable position while allowing the non-stroked valve means to remain in its neutral position.

4,342,336

DOUBLE-ACTING INFLATABLE SEAL

J. Glenn Satterthwaite, 1538 Lea View Ave., Norfolk, Va. 23505, and Dennis M. Riddleberger, 5613 Springwood Dr., Portsmouth, Va. 23703

Continuation-in-part of Ser. No. 81,511, Oct. 3, 1979, Pat. No. 4,250,926, which is a continuation of Ser. No. 699,676, Jun. 25, 1976, abandoned. This application Feb. 10, 1981, Ser. No. 233,240

Int. Cl.³ F16L *55/12*

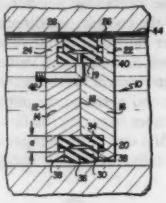
U.S. Cl. 138—90 **51 Claims**

1. An inflatable, double-acting seal apparatus, comprising:

an annular, hollow seal element having an inner wall for contacting a first surface, said inner wall being under circumferential compressive stress when said seal element is uninflated, and an outer wall for contacting a second surface, said outer wall being under circumferential tensile stress when said seal element is uninflated; and

means for inflating said seal element, so that upon inflation

said inner wall and said outer wall will displace radially inwardly and outwardly, respectively, from their uninflated positions until contact is established with one of said



first and second surfaces, whereupon further displacement of at least a portion of both said inner and outer walls occurs in the direction of the other of said first and second surfaces.

4,342,337

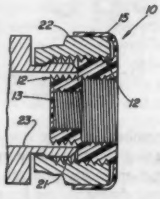
PROTECTIVE CLOSURE FOR AN ARTICLE

Gerald T. Underwood, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Mar. 28, 1980, Ser. No. 134,932

Int. Cl.³ F16L *55/10*

U.S. Cl. 138—96 T **12 Claims**



1. A protective closure for an article comprising:

(a) a hollow member having an open end, a closed end and a cylindrical portion located therebetween, said cylindrical portion having at least two pairs of overlapping, threaded internal and external surfaces; and

(b) a sleeve extending radially outward from said open end of said hollow member, said sleeve having a flexible thin wall which can be folded back over said article.

4,342,338

BOOT FOR SEALING RUPTURED GAS OR WATER MAINS AND TOOL FOR APPLICATION

William L. Glennie, Phoenix, Ariz., assignor to Jack M. Mitchell, Phoenix, Ariz., a part interest

Filed Sep. 10, 1980, Ser. No. 185,768

Int. Cl.³ F16L *21/06*

U.S. Cl. 138—99 **7 Claims**

1. A boot for sealing a ruptured gas or water main comprising:

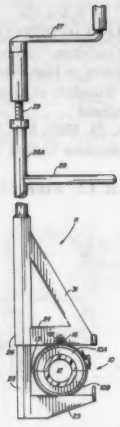
a pair of arcuate members hingedly connected along a common edge and rotatable about said hinge to form a hollow cylinder when their free edges are in an abutting relationship,

resilient means for lining the interior of each of said arcuate members,

said resilient means forming a cylindrical configuration within said hollow cylinder when the free edges of said members are in abutting relationship,

attachment means provided on the outer periphery of one of said members for pivotally connecting to a tool for rotating it relative to the other of said members,

said attachment means comprising a ridge having two spacedly aligned parts extending longitudinally of said one of said members,



each of said parts having an aperture extending longitudinally therethrough in axial alignment with the other, and

a rod extending through each of said parts and bridging the space therebetween,

whereby the tool is mounted on said rod between said parts of said ridge.

4,342,339

WEAVING HEDDLE

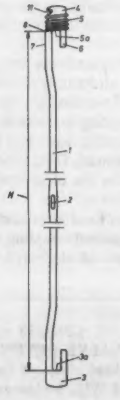
Bernhard R. Koch, Horgenberg, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

Filed Jul. 11, 1980, Ser. No. 167,485

Claims priority, application Switzerland, Jul. 30, 1979, 6999/79

Int. Cl.³ D03C *9/04*

U.S. Cl. 139—93 **5 Claims**



1. A weaving heddle, comprising an elongated heddle shaft having U-hook shaped end loops at opposite ends thereof for holding the heddle on opposed heddle carrying rods of a heddle frame, said loops including shanks for overlapping with the

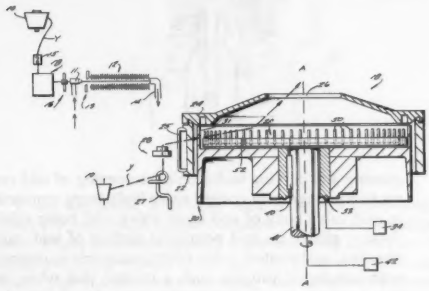
rods, said loops having inner support surfaces spaced a predetermined distance apart and extending transversely of said shaft for engagement with the rods, one of said support surfaces being formed by a resilient member for allowing said distance to increase, said resilient member being urged to accommodate any such increase in said predetermined distance.

4,342,340

AIR JET LOOM FILLING FEEDING

Worth M. Key, Hurt, and Wayne Herkness, Salem, both of Va., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Jun. 11, 1980, Ser. No. 158,577
Int. Cl.³ D03D *47/34*
U.S. Cl. 139—435 **15 Claims**



1. A yarn delivery device for textile machines, comprising
a stationary housing;
a yarn inlet to said housing and a yarn outlet from said housing, yarn traveling from said inlet to outlet in a yarn path;
a measuring drum mounted for continuous rotation within said housing about an axis of rotation, said measuring drum having a lip, spaced from said housing, past which yarn in the yarn path passes;
a filling snubber wheel mounted for rotation with said measuring drum and having a plurality of axially-extending projections, and mounted for axial movement with respect to said measuring drum from a first position wherein said yarn-catching projections are contained within a volume defined by said measuring drum lip, to a second position wherein said yarn-catching projections extend axially outwardly past said measuring drum lip into said yarn path so that one of said projections will catch yarn in said yarn path and cause the yarn to be taken up on said rotating measuring drum; wherein the improvement comprises:
said filling snubber wheel projections comprising a plurality of smooth-surfaced cylindrical pins; and said device further comprising a plurality of surface manifestations formed in said filling snubber wheel, and means for replaceably mounting said pins in association with said surface manifestations; and wherein said filling snubber wheel comprises a circular plate having a circular rim axially upstanding along the periphery of one face thereof, and wherein said surface manifestations are formed in said rim and said pins axially upstanding from said rim.

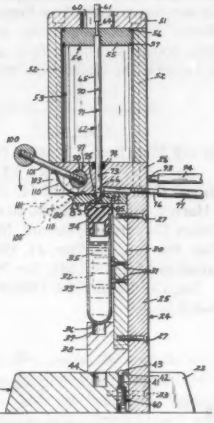
4,342,341

BLOOD TRANSFER DEVICE

Peter F. Lee, Minneapolis, Minn., assignor to Southland Instruments, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 13,078, Feb. 21, 1979, Pat. No. 4,274,453. This application Jun. 12, 1980, Ser. No. 158,772
Int. Cl.³ B65B *3/04;* B67C *7/00*
U.S. Cl. 141—1 **4 Claims**

1. The method of extracting a sample from a container of fluid having a longitudinal axis and a penetrable, self-sealing enclosure at one end, comprising the steps of:
(1) mounting said container with said axis vertical and said closure upward,
(2) actuating a hollow needle having a plurality interconnected apertures and passageways therein, axially penetrate said closure and enter said container,
(3) draining contents from said container through needle while simultaneously admitting replacement air to said container,



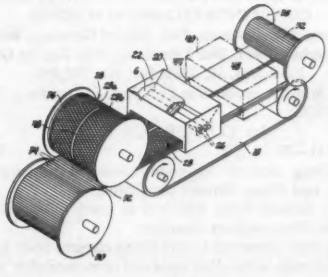
(4) withdrawing said needle from said container into a substantially enclosed area while wiping any contents from the surface of said needle as it is being withdrawn,
(5) passing a cleaning liquid through a portion of said apertures and passageways of said hollow needle while preventing said cleaning liquid from having any contact with said container, and
(6) removing said cleaning fluid from said needle without exposing said fluid to the ambient atmosphere surrounding said container and said needle.

4,342,342

GROOVED AND CRACKED BATTERY PLATE AND PROCESS FOR COIL-CURING SAME

Ellis G. Wheadon, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1980, Ser. No. 209,377
Int. Cl.³ B65B *3/04;* H01M *6/10*
U.S. Cl. 141—1.1 **4 Claims**



1. A process for making Pb-acid storage battery plates comprising the steps of:
passing a strip of grid stock lengthwise through a battery grid pasting station, said stock comprising a network of interconnected grid-wires defining a plurality of paste-receiving cells;
applying a wet, leady active material paste to said stock at

said station such as to fill said cells and to provide a substantially flat pasty surface on each side of said stock;

scoring each of said surfaces transverse the length of said strip such as to provide a plurality of substantially paralleling grooves closely spaced along said length;

coiling the grooves stock on to reels;

curing and drying the coiled stock;

uncoiling the dried stock; and

cutting the uncoiled stock into individual battery plates;

said grooves serving to control the formation and location of cracks formed in said paste during uncoiling so as not to substantially loosen said paste from said network or substantially increase the internal electrical resistance of the plate.

4,342,343

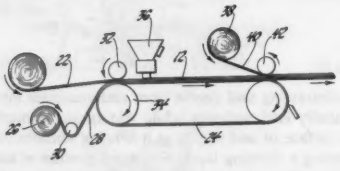
METHOD OF MAKING A NEGATIVE LEAD-ACID STORAGE BATTERY PLATE

Robert E. Clague, Berkley; Richard H. Hammar, Fraser, and Douglas J. Harvey, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 135,243, Mar. 31, 1980, abandoned. This application Mar. 25, 1981, Ser. No. 247,628

Int. Cl.³ B65B *3/04;* H01M *6/00*

U.S. Cl. 141—1.1 **4 Claims**



3. A method of distributing a plurality of interconnected carbon fibers over the face of a substantially continuous strip of lead-acid storage battery plate-making stock comprising the steps of:

securing said fibers to the surface of a substantially continuous paper carrier strip;

applying a leady active material paste to a substantially continuous strip of reticulated, conductive battery grid stock; and

pressing said surface and paste together to intimately engage said fibers with said paste and thereby enhance the formability of battery plates made from said plate-making stock.

4,342,344

FILLING ELEMENT FOR COUNTERPRESSURE CONTAINER-FILLING MACHINES

Egon Ahlers, Neu-Bamberg, Fed. Rep. of Germany, assignor to Seitz-Werke GmbH, Bad Kreuznach, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,453

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1979, 2947035

Int. Cl.³ B65B *3/26, 31/00*

U.S. Cl. 141—39 **7 Claims**

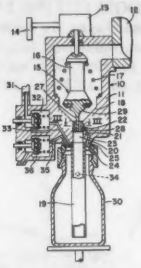
1. A filling element for counterpressure container-filling machines, said filling element comprising:

a filling element body which is in communication with a liquid filling-medium chamber;

a filling tube connected to said filling element body and open at both ends, with a first open end communicable with said filling-medium chamber for receiving said liquid, and a second open end communicating with a container which is placed thereover for receiving said liquid therefrom;

a liquid valve, which includes an axially displaceable valve body, for selectively completing and interrupting communication of said filling-medium chamber with said filling tube, said filling element body including a filling valve outlet chamber which is interposed between said valve body and said first open end of said filling tube, and has an inner peripheral surface, said filling element body also including a connecting passage, one end of which is communicable with a container placed over said second open end of said filling tube, the other end of which has a slide-over opening into said peripheral surface of said outlet chamber; and

a control valve, in the form of a valve body, for selectively



opening and curving said slide-over opening of said connecting passage, said control valve body being connected to said valve body of said liquid valve, and being axially slidably guided on said peripheral surface of said outlet chamber, said control valve being actuatable in common with said liquid valve in such a manner that when said liquid valve is open, said control valve is closed, and when said liquid valve is closed, said control valve is open.

4,342,345

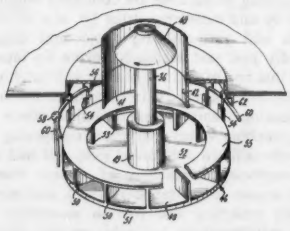
METHOD AND APPARATUS FOR FILLING BULK MATERIAL CONTAINERS

Robert P. Nadin, Wharton; Antonios Nicholakopoulos, Mercerville; Joseph P. Urban, Port Reading, and Steven G. Markowski, East Brunswick, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 9, 1980, Ser. No. 214,586

Int. Cl.³ B65B *1/10*

U.S. Cl. 141—392 **9 Claims**



1. An improvement in the apparatus for feeding and distributing in a container of varying configuration bulk materials which includes inlet means including a discharge outlet positioned near the top of the container, and rotor means horizontally positioned below said inlet means, whereby said bulk materials are delivered from said inlet means through said discharge outlet into said rotor means the improvement wherein said rotor means includes a rotor having a substantially circular base member, a rotor shaft for providing movement to said rotor, said base member being detachably secured to said rotor shaft, and a system of upright vanes radially distributed on said base member, said vanes extending from the outer periphery of said base member inwardly towards said rotor shaft and terminating at a point at or prior to the periph-

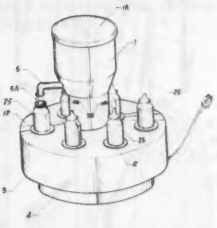
ery of said discharge outlet of said inlet means to define an unobstructed central area between said rotor shaft and the inward edge of said vanes.

4,342,346

AUTOMATIC POWDERED MILK FILLERS

Yung-Kuan Wei, No. 196, Yen Tien Li An Nan District, Tainan, Taiwan

Filed Mar. 18, 1980, Ser. No. 131,546
Int. Cl.³ B65B *1/12*
U.S. Cl. 141—85 **4 Claims**



1. An automatic powdered milk dispenser comprising a generally cylindrical hollow container having a funnel shaped portion near its lower end, said lower end being closed and the upper end being open, a removable cap for closing said upper end, a pipe-shaped outlet extending substantially horizontally from the lower part of said funnel shaped portion, a downturned outer end on said outlet, the inner end of said outlet communicating with the interior of said funnel shaped portion, feed means situated within the lower end of said funnel shaped portion to feed powdered milk within said container through said outlet, a cylindrical extension at the lower end of said container having an external screw thread thereon, a hollow upstanding cylindrical column for supporting said container, an internal screw thread at the upper end of said column engaging said external screw thread, the lower end of said column being closed, a hollow cylindrical base for supporting said column comprising an inverted dish-shaped upper member and a plate-like lower member, said lower member closing the lower open end of said upper member and being fastened thereto by screws, a cylindrical recess in the center of said upper member for receiving and removably retaining the lower end of said column in upstanding position, a plurality of holes arranged in circumferential spaced relationship in said upper member around said recess, a cup shaped member disposed within each said hole to receive and hold a bottle therein in upstanding position, said holes being located so that at any one time the upper end of one of said bottles is positioned under said downturned outer end of said outlet to receive powdered milk dispensed therefrom, an ultraviolet lamp within said base for sterilizing said bottles when placed in said cup members, means to operate said feed means, and means to energize said ultraviolet lamp.

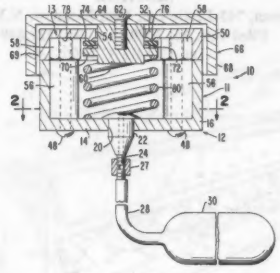
4,342,347

PRESSURE DUMP VALVE

Eugene K. Paulson, 351 Rosemont Dr., Santa Clara, Calif. 95051

Filed Jun. 20, 1980, Ser. No. 161,463
Int. Cl.³ B65B *3/04*; F16K *15/20*
U.S. Cl. 141—98 **5 Claims**

1. A fluid valve for providing filling or rapid discharge of a pressurized vessel comprising: a hollow body having a wall provided with a first opening therethrough and an internal valve seat surrounding the opening, the interior space of said body being generally cylindrical and having a pair of opposed ends, said opening being at one end of and communicating directly with said space; a valve member shiftably received within and extending through the first opening and having a flange moveable toward the valve seat in valve closing relationship with respect thereto, the first opening and the valve member defining a fluid flow passage; means coupled with the valve member for biasing the flange into valve closing relationship with the valve seat, said body having a second opening at the opposite end of and communicating directly with said space, whereby the second opening can receive means for connecting the same to a vessel to be pressurized; and valve means coupled with the body for permitting a fluid under pressure to be directed into the body and to pressurize the



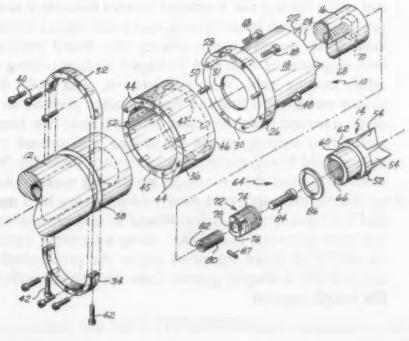
vessel when the vessel is connected with the second opening of the body and when the flange is in valve closing relationship with respect to the valve seat, said body being free of restrictive fluid flow passages between said space and said first and second openings; and including an actuating cap secured to the valve member exteriorly of the body, said cap including an end wall adjacent to said wall of the body and a skirt secured to the end wall, the skirt surrounding and being spaced from a portion of the body, whereby when said cap is depressed, said first opening is opened when it is desired to depressurize said vessel.

4,342,348

VENEER LATHE CHUCK ASSEMBLY

Robert H. Lichtenwalter, Tacoma, and Darrell E. Pierson, Federal Way, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Jul. 3, 1980, Ser. No. 165,918
Int. Cl.³ B27C *7/04*; B27L *5/00*
U.S. Cl. 144—209 R **7 Claims**



1. A chuck for use in a veneer lathe assembly, comprising;
a substantially circular base member arranged and adapted for attachment to a rotatable spindle on a first end thereof, and
a plurality of at least three thin chisel-like teeth each having a length L and width W in a ratio of approximately 1:1 extending outwardly from the base member on a second

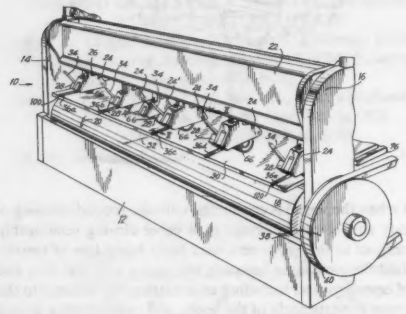
end thereof and joined together substantially along the center line of the chuck thereby forming a star-like tooth pattern and a plurality of flat sector shaped portions comprising at least 90% of the face area on the second end of the base member.

4,342,349

APPARATUS AND METHOD FOR GROOVING A BOARD-LIKE MATERIAL, A GROOVING TOOL THEREFOR AND A STRUCTURE MADE BY THE METHOD

Daniel Lipman, 741 Leslie La., East Meadow, N.Y. 11554

Filed Feb. 15, 1980, Ser. No. 121,649
Int. Cl.³ B27C *5/00*
U.S. Cl. 144—371 **38 Claims**



1. Apparatus for grooving board material having a first and second surface comprising:

a grooving tool means having a V-shaped leading cutting edge with a preselected included angle for cutting a V-shaped groove in the first surface of the board material to a depth which is a preselected distance from the second surface, said grooving tool means including an elongated member, one end of which is provided with the V-shaped leading cutting edge;

means for producing relative movement of said grooving tool means and said board material to cut the V-shaped groove in said board material;

guide means for inhibiting nonlinear relative movement of said V-shaped leading cutting edge and said board material while cutting the V-shaped groove to cause a straight groove to be cut in said board, said guide means including hold down means for maintaining said board material in firm engagement with said V-shaped leading cutting edge while cutting said V-shaped groove, said hold down means including a body, a first member pivoted to said body, a second roller rotatably affixed to said first member and spring loading means for urging said second roller against said board material to resiliently press the board material against the movement producing means; and

a superstructure supported over said grooving tool means, said hold down means being affixed to said superstructure and said grooving tool means being adjustably mounted on said hold down means to adjust the preselected distance of the V-shaped groove from the second surface of the board material.

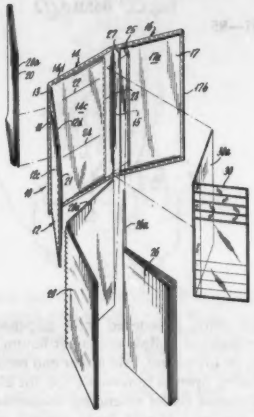
4,342,350

BUSINESS WALLET CONSTRUCTION

Lawrence Resnick, 110 Kenyon Ave., Pawtucket, R.I. 02861

Filed Aug. 29, 1980, Ser. No. 182,735
Int. Cl.³ A45C *1/06*
U.S. Cl. 150—35 **1 Claim**

1. A business wallet construction comprising first, second and third flaps, each including left and right sides and front and rear faces, a fold line separating said second and third flap, said first flap attached as a hinged free-turning appendage to the left side of said second flap, said third flap defining a substantially full length side opening into said flap adjacent said fold line and including a slightly displaced substantially full length vertical slot on said front face, said slot being cut in the material forming said front face of the third flap, a member having a securement flap, said securement flap being received within said slot,



and a second member having a back cover, said back cover being received within said slot, said back cover being slightly greater in width than said securement flap, so that when said first member is inserted in said slot, said second member may then be inserted within said slot with sufficient room to accommodate said first member in order that the two members may be folded as efficiently as possible with respect to thickness within said slot.

4,342,351

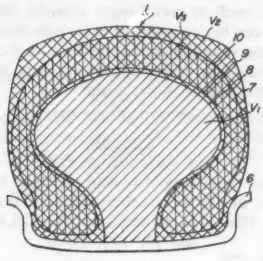
PNEUMATIC TIRE FOR HIGH SPEED UNDER HEAVY LOAD

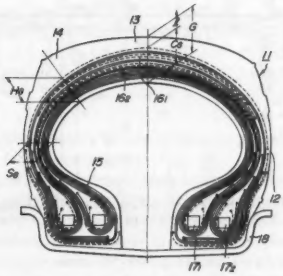
Masahiro Kuroda, Higashi-Murayama, Japan, assignor to Bridgestone Tire Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 897,814, Apr. 19, 1978, abandoned.
This application Apr. 23, 1980, Ser. No. 142,956
Claims priority, application Japan, Apr. 28, 1977, 52/48492
Int. Cl.³ B60C *3/00, 9/06, 9/20*
U.S. Cl. 152—209 R **8 Claims**

1. A pneumatic tire for high speed under a heavy load comprising; a casing reinforcing layer composed of a plurality of carcass plies mainly formed of organic textile cords inclined at an angle of at most 45° to the circumferential direction of the tire, said carcass plies extending from one bead portion of the tire through a crown portion of the tire to the other bead portion and superimposed one upon the other, and a plurality of reinforcing fabrics whose material and inclined angle to the circumferential direction of the tire are substantially the same as those of said cords of the carcass ply and interposed between said carcass plies, said plurality of reinforcing fabrics extending from those positions which are distant apart from one of the bead portions through the tire crown portion and terminating at those positions which are distant apart from the other bead portion, the number of said reinforcing fabrics being at least 20% of the total number of both said carcass plies and said reinforcing fabrics of said casing reinforcing layer, the total number of carcass plies and reinforcing fabrics of said casing reinforcing layer being divided into two halves and one of said two halves crossing the other half, said reinforcing fabrics gradually changing in width within a range between 35% and 60% of the inner peripheral length of the tire and symmetri-

cally arranged with respect to the crown center portion, the superimposed thickness of said casing reinforcing layer being uniformly and continuously decreased such that the thickness at a hump portion is within a range between 85% and 95% of the thickness at the crown center portion thereof and the thickness at a side wall portion is within a range between 50% and 75% of the thickness at the crown center portion thereof, the thickness of a tread coating rubber surrounding said casing reinforcing layer being gradually increased from the crown center portion toward the hump portions such that the thickness at the crown center portion is 10 to 28% of the total thickness of the crown center portion and is at most 1.5% of the maximum outer diameter of the tire when it is inflated, and said tire having such a high rigidity as defined by cross-sectional area ratios given by





V_2/V_1=0.45 to 0.60 and

V_3/V_2=0.6 to 0.8

where V_1 is a total cross-sectional area surrounded by the outer contour of the tire and a flat base rim, V_2 is a substantial cross-sectional area surrounded by the outer and inner contours of the tire and V_3 is a cross-sectional area of said case reinforcing layer inclusive of bead cores, wherein a decrease of the radius of curvature at the crown portion induced when the tire is rotated on the ground at a high speed under a heavy load is primarily alleviated by a deformation of said side wall portion.

4,342,352

TRACTION DEVICE FOR VEHICLE WHEEL

Ilie Tisma, 4563 Polk St., Gary, Ind. 46408

Filed Mar. 17, 1980, Ser. No. 130,735

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—225 C **4 Claims**

1. A traction device for a vehicle tire comprising:

a shoe member;

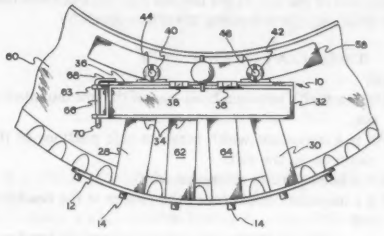
a first support means radially upstanding from a side of said shoe member;

a first bar member connected to said first support means;

a second support means radially upstanding from the opposite side of said shoe member;

a first flat bar member supported on said second support means, said first flat bar member being disposed substantially normal to said second support means;

a second flat bar member hinged to said first flat bar member, said second flat bar member being pivotable from a position perpendicular to said first flat bar member to a position parallel and contiguous to said first flat bar member;



means for locking said second flat bar member to said first flat bar member when said second flat bar member is in a position parallel and contiguous to said first flat bar member;

a threaded sleeve means and guide sleeve means provided on said second flat bar member;

a threaded shaft member rotatable in said threaded sleeve means; and

a second bar member having spaced pins supported in said guide sleeve means, said second bar member being moveable toward said first mentioned bar member by said threaded shaft member.

4,342,353

RADIAL TIRE FOR HEAVY LOAD VEHICLES

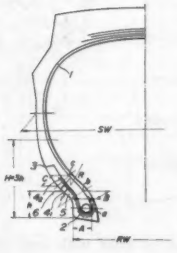
Akira Tamura, Kodaira, and Yasuo Suzuki, Akigawa, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed May 29, 1981, Ser. No. 268,520

Claims priority, application Japan, Jun. 9, 1980, 55/77492

Int. Cl.³ B60C *15/00, 15/06*

U.S. Cl. 152—362 R **5 Claims**



1. In a radial tire for heavy load vehicles comprising a carcass composed of wire cord plies having cords arranged substantially in a radial plane of the tire and wound around a bead core and a rubber stock disposed thereon from the inside to the outside thereof to form a turn-up portion, and a bead portion including at least one reinforcing layer arranged along the turn-up portion of the carcass and having cords crossed with the cords of said turn-up portion of the carcass, the reinforcing layer together with the turn-up portion of the carcass being

sandwiched between and embedded in the rubber stock and an outer coating rubber, the improvement in which that end of the wire cords of the turn-up portion or reinforcing layer which is located below the maximum width position of the tire and disposed outside the bead core is arranged at a position which is higher than the height h of the rim flange of a bead portion mounting rim but lower than the height which is three times of the above height h, and the outer coating rubber of the bead portion has a thickness distribution with respect to a bead portion reference width A which is shorter than the height h of the rim flange and measured from the outer surface of the bead portion through the center of the bead core in parallel with the rotary axis of the tire to the carcass ply, the thickness distribution satisfying the following condition given by

$$0.30 \leqq (B\text{-}C/A^2) \times (RW/SW) \leqq 0.55$$

where

RW is a width between bead legs of the tire mounted on the rim,

SW is a maximum width between side portions of the tire mounted on the rim,

A is a bead portion reference width,

B is a minimum thickness of the rubber at the bead portion, and

C is a maximum thickness of the rubber at the bead portion.

4,342,354

MECHANISM FOR STOPPING THE DRIVE OR REVERSING THE DRIVE OF MOTORS OF ROLLER SHUTTER DOORS

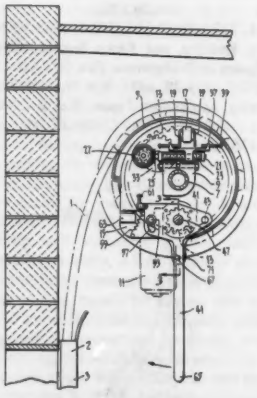
Simon Leivenzon, and Steven Leivenzon, both of Caulfield, Australia, assignors to Firmaframe Nominees Pty. Ltd., Cheltenham, Australia

Filed Jun. 27, 1980, Ser. No. 163,715

Claims priority, application Australia, Jul. 4, 1979, PD9454

Int. Cl.[3] **E06B** *9/204, 9/209, 9/10*

U.S. Cl. 160—133 **6 Claims**



1. A roller shutter door with limit switch sensing means comprising:

(a) a door curtain;

(b) drum means upon which the door curtain is to be wound, the upper portion of the curtain being secured to the drum means;

(c) an internal ring gear mounted with its central longitudinal axis in line with the central longitudinal axis of said drum means and attached thereto;

(d) a reversible electric motor means having a pinion gear drivably connected therewith and arranged to mesh with said ring gear whereby to drive said drum to wind the curtain on and off the drum for closing and opening the door respectively;

(e) a gear train drivably connected with said ring gear and including an elongate screw thread, the longitudinal axis of which extends substantially perpendicular with the central longitudinal axis of said drum means and immediately adjacent said ring gear and between the circumferential edge surfaces thereof;

(f) a carriage, said carriage being threaded on said screw thread and restrained from rotating with said screw thread but being able to be advanced or retreated along said screw thread as said screw thread is rotationally driven by said gear train, said carriage having two end flanges spaced apart in a direction substantially parallel with the longitudinal axis of said screw thread;

(g) limit switch means supported between said flanges, and;

(h) respective screw thread limit stop adjusting means carried by each of said flanges whereby the limit switch means can be activated by said respective screw thread limit stop adjusting means when the door curtain is at the fully closed or fully open positions to switch off said reversible electric motor means.

4,342,355

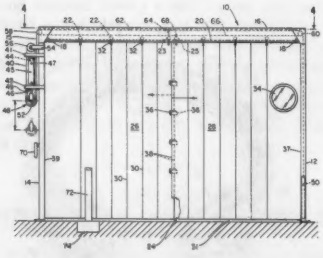
CARWASH DOOR

Martin Geller, 9 Hickory Way, Sharon, Mass. 02067, and Russell Doyle, 24 Elm St., Duxbury, Mass. 02332

Filed Mar. 31, 1980, Ser. No. 135,447

Int. Cl.[3] **A47H** *5/00*

U.S. Cl. 160—331 **7 Claims**



1. A door for the passage of vehicles comprising:

two side supports and a top support defining a doorway;

a generally flexible curtain suspended from said top support, said curtain being formed of two sections and extending across the width of said doorway when in a closed position, each of said sections having a fixed edge adjacent an associated one of said side supports and a free edge, said free edge of each of said sections being disposed in a position intermediate said side supports and adjacent the free edge of the other of said sections when said curtain is in a closed position said free edge of each of said sections being disposed adjacent its fixed edge and in spaced relation with the free edge of the other of said sections when said curtain is in an open position;

means actuable for withdrawing said sections of said curtain into said open position to permit a vehicle to pass through said doorway, said withdrawing means comprising:

a pneumatically actuated cylinder having a piston movable within a chamber and a piston rod attached to said piston, said piston rod having a distal end projecting externally of said chamber;

a first pulley disposed at said distal end of said piston rod;

a second pulley disposed at the intersection of one of said side supports and said top support;

a third pulley disposed at the intersection of the other of said side supports and said top support;

a fourth pulley disposed adjacent said pneumatically actuated cylinder; and

pulley lines interconnecting said first pulley, said second pulley, said third pulley and said fourth pulley;

means for drawing said sections of said curtain into said closed position upon deactuation of said withdrawing means, said drawing means being interconnected with said first pulley, said second pulley, said third pulley and said fourth pulley by said pulley lines; and

means for actuating and deactuating said withdrawing means.

4,342,356

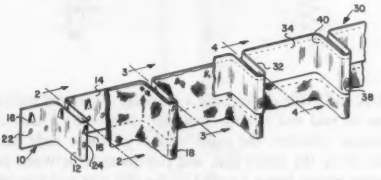
COMBINED FABRIC HANGING AND PLEATING BRACKET

Arthur C. Sickels, and Anthony R. Sickels, both of Dayton, Ohio, assignors to Soundfold, Inc., Dayton, Ohio

Filed Apr. 4, 1980, Ser. No. 137,151

Int. Cl.³ A47H *13/14*

U.S. Cl. 160—348 **2 Claims**



1. A bracket structure for use in hanging and pleating decorative wall fabric, comprising:

an enlarged flat sheet metal backing strip having a plurality of generally U-shaped cross section extensions formed at uniformly spaced intervals along the length thereof and intermediate flat sections in a common plane between adjacent extensions for resting against a wall to which said strip is to be secured, a plurality of holes defined in said intermediate flat sections for securing said strip to a wall, a plurality of fabric engaging pointed tabs formed in said strip to extend toward a side edge thereof and outwardly away from the side of said strip which will rest against a wall to hold fabric on said backing strip while defining pleats therein corresponding to said extensions, some of said tabs being formed in said extensions adjacent but removed from the corners formed by the intersection of said extensions and intermediate sections and others of said tabs being formed in the curved portion of said U-shaped extensions, and at least one hole defined in the curved portion of each U-shaped extension;

a rigid facia strip longitudinally coextensive with said sheet metal backing strip and including U-shaped extensions for telescoping over said backing strip extensions with an intermediate layer of fabric therebetween, a plurality of holes defined in said facia strip in registry with said holes in said curved portions of said U-shaped extensions, said facia strip being laterally offset when secured to said backing strip so that a portion extends beyond the fabric and the adjacent edge of said backing strip; and

means insertable in said holes in said curved portions of said extensions of both said backing strip and said facia strip for securing said facia strip to said backing strip with said fabric layer therebetween.

4,342,357

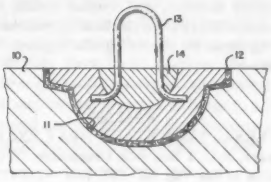
APPARATUS AND METHOD FOR PRODUCING INGOT MOLD CAPS

Norman F. Tisdale, Jr., 253 Chessrown Ave., Gibsonia, Pa. 15044

Filed May 28, 1980, Ser. No. 154,102

Int. Cl.³ B22D *19/00*

U.S. Cl. 164—112 **9 Claims**



6. A method for producing ingot mold caps comprising the steps of:

(a) forming a chill element having a cavity defined therein corresponding in shape to an ingot mold cap;

(b) placing a pre-formed pad of refractory fiber felt insulation comprising about 50 to 60% SiO_2, about 40 to 50% Al_2O_3 and the balance impurities in ordinary amounts in said opening as a fitted lining;

(c) placing a core carrying a metal staple centrally of said pad and spaced therefrom to form a metal receiving area between said core and pad, said staple having portions extending out of the core into the metal receiving area;

(d) casting molten iron in the area between said pad and core;

(e) solidifying said iron; and

(f) removing said solidified iron as a completed ingot mold cap from said pad.

4,342,358

CONTINUOUS CASTING INSTALLATION

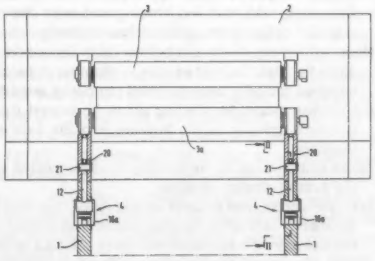
Rudolf Guse, Ratingen, Fed. Rep. of Germany, assignor to Sack GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,403

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903540

Int. Cl.³ B22D *11/128*

U.S. Cl. 164—448 **7 Claims**



1. Continuous casting apparatus comprising an arcuate bed, a cast rod guide of segmental construction mounted on said bed, each rod guide segment including a plurality of rod guide elements mounted in a frame, and multiple fixing means releasably anchoring said frame to said bed, each fixing means comprising a first bore extending transversely in the bed, a second bore extending vertically in the bed between the first bore and said frame, a part-cylindrical bearing member fitted in the

upper part of said first bore, a third bore extending through said bearing member in alignment with said second bore, a traction rod slidably mounted in said second and third bores and having projecting head and tail ends, corresponding apertures in said frame and said traction rod head end, a removable locking pin passing through said apertures to releasably interconnect the traction rod and the frame, a reaction member axially adjustably mounted on the tail end of the traction rod, biasing means for biasing the traction rod upwardly to bring the reaction member into abutting relation with the underside of said bearing member, and loading means for urging the reaction member away from the bearing member so as to exert an anchoring force on the rod guide segment frame through the traction rod.

4,342,359

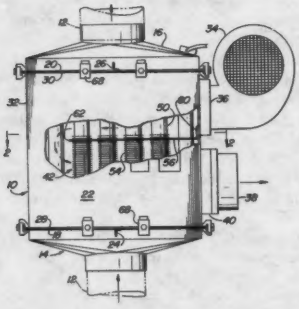
UNIVERSAL FLUE STACK HEAT EXCHANGER

Jack T. Baker, R.D. 1 Box 413, Greenwich, N.Y. 12834

Continuation of Ser. No. 857,737, Dec. 12, 1977, abandoned. This application Jan. 29, 1980, Ser. No. 116,512

Int. Cl.³ F24B *7/02*; F28F *13/14*

U.S. Cl. 165—47 **3 Claims**



1. A universal flue gas heat exchanger for use in combination with a flue stack of any one of a multiplicity of heating appliances which may require different rates of heat exchange from the flue gases without affecting the safe operation of the heating appliance, comprising:

(a) an enclosed housing to replace a section of an interrupted flue stack, said housing having an inlet assembly at one end thereof for receiving a lower portion of the interrupted flue stack and an outlet assembly at the other end thereof for receiving an upper portion of the interrupted flue stack, said enclosed housing and inlet and outlet assemblies defining an enclosed heat exchange chamber;

(b) a multiplicity of straight hollow tubes for conducting flue gases through the heat exchange chamber in parallel paths between the inlet assembly and the outlet assembly;

(c) blower means for forcing air to be heated through an entrance opening in the housing into the heat exchange chamber;

(d) an exit opening in the housing to allow heated air to exit the heat exchange chamber;

(e) a pre-determined number of said tubes, less than the total number of said tubes, having spaced heat-conducting fins, the number of tubes with fins being selected to provide a rate of overall heat exchange for the heat exchanger which is matched to the heating appliance in order to provide efficient recovery of heat from the flue gases without affecting the safe operation of the heating appliance;

(f) the entrance opening for the air to be heated being located in the housing near the outlet assembly, and the exit opening to allow heated air to exit the heat exchange chamber being located in the housing near the inlet assembly and generally directly below the entrance opening, and further comprising a baffle plate located within the heat exchange chamber intermediate said entrance and exit openings to direct the air to be heated in a generally U-shaped path across first the upper portion of said tubes and then across the lower portion of said tubes, whereby the temperature differential between the air to be heated and the flue gases inside the tubes is made more uniform along the tube length;

(g) said tubes which are finned having the fins concentrated along the length of the tube below said baffle.

4,342,360

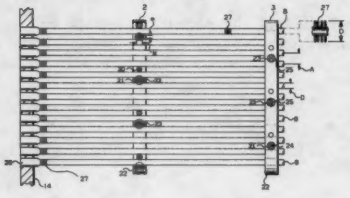
ROD BAFFLED HEAT EXCHANGER

Cecil C. Gentry, and William M. Small, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 31, 1980, Ser. No. 202,827

Int. Cl.³ F28F *9/00, 9/24*

U.S. Cl. 165—67 **46 Claims**



1. A rod baffle comprising a plurality of parallel rods at least some of said rod having a surface defined by a non-circular elliptical cylinder, the cross section of these rods being the same along the entire rod, and the distance between parallel, tangent planes being parallel to the rod axis and touching the rod surface varying from a smallest extension to a largest extension around the rod.

4,342,361

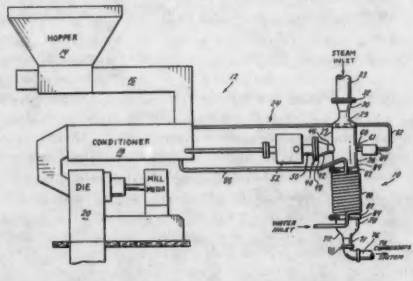
HEAT EXCHANGER FOR PELLET MILL

Joseph A. Volk, Jr., Florissant, Mo., assignor to Beta Corporation of St. Louis, Bridgeton, Mo.

Filed Oct. 14, 1980, Ser. No. 196,436

Int. Cl.³ F22B *1/02*

U.S. Cl. 165—113 **21 Claims**



1. A heat exchanger for use in the production of pellets where both steam and water are used in a conditioner to condition milled material before pelleting, said heat exchanger comprising an elongated chamber for generally vertical orientation, said chamber having a steam inlet at the upper end thereof for the delivery of steam to said chamber from a steam supply and a steam outlet at right angles to said steam inlet for deliv-

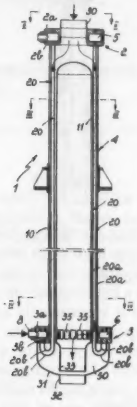
ery of steam to said conditioner, a portion of said chamber beneath said steam outlet defining a trap for the collection of condensate, a second outlet beneath said steam outlet for the delivery of said condensate from said chamber to said steam supply, and a coil surrounding at least a portion of said chamber for heat exchange therebetween, whereby water passing through said coil is heated by the heat exchange from said chamber for delivery to said conditioner.

4,342,362

COUNTERFLOW HEAT EXCHANGER HAVING TWO FIXED TUBE PLATES

Riccardo Belleli, Via Hermada 13, Mantova, Italy

Filed Mar. 30, 1979, Ser. No. 25,681
Claims priority, application Italy, Apr. 6, 1978, 22067 A/78
Int. Cl.³ F28F 9/02
U.S. Cl. 165—158 **7 Claims**



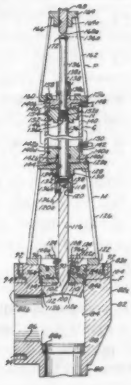
1. A heat exchanger with a longitudinal extension having a cylindrical outer shroud coaxial and substantially coextensive therewith, an inner cylindrical jecket closed at least at one end thereof and spaced from said outer shroud thereby to define therebetween a cross-sectionally annular interspace, a first annular tube plate at one end of said cylindrical shroud coaxial therewith and a second annular tube plate at the other end thereof and coaxial therewith, means defining a first opening for a first heat exchanging fluid at said one end of said cylindrical shroud coaxial therewith an surrounded by said first annular tube plate and in communication with said annular interspace, means defining a second opening for said first heat exchanging fluid at said other end of said shroud coaxial therewith and surrounded by said second tube plate and in communication with said annular interspace, said second tube plate having a mean diameter greater than the mean diameter of said first tube plate, first wall means in said first tube plate defining one annular collector chamber therein coaxial therewith, said first wall means including one annular flat surface internal to said outer shroud and facing said annular interspace in the longitudinal direction of the heat exchanger towards said other end, a first plurality of through holes distributed all over said one annular flat surface and opening into said one annular collector chamber, second wall means in said second tube plate defining another annular collector chamber therein coaxial therewith, said second wall means including another annular flat surface having a mean diameter greater than the diameter of said outer shroud and facing away therefrom in the longitudinal direction of the heat exchanger and extending in a plane parallel to said one annular flat surface, a second plurality of through holes distributed all over said another annular flat surface and opening into said another annular collector chamber, said means defining a second opening including a cap enclosing said another annular flat surface, said second plurality of through holes being circumferentially and outwardly offset with respect to said first plurality of through holes, said one and said another collector chambers having connectors for a second heat exchanging fluid to circulate therethrough, a plurality of substantially rectilinear parallel heat exchanger tubes within said annular interspace and extending in the longitudinal direction of the heat exchanger and coextensive with said annular interspace and arranged therein in substantially polar simmetry, said tubes having their one straight end thereof terminating in said first plurality of holes to allow circulation of said second heat exchanging fluid between said one collector chamber and said heat exchanger tubes, said tubes having on the opposite side thereof end portions U-bent outwardly with respect to said annular interspace and having their edges terminating at said second plurality of holes to allow circulation of said second heat exchanging fluid between said another collector chamber and said heat exchanger tubes.

4,342,363

GEOTHERMAL WELL HEAD

Lehman T. Reed, Bakersfield, Calif., assignor to Midway Fishing Tool Company, Long Beach, Calif.

Filed Nov. 3, 1980, Ser. No. 203,407
Int. Cl.³ E21B 33/03, 34/02, 34/16
U.S. Cl. 166—97 **15 Claims**



1. In combination with a pressurized fluid producing geothermal well that has a surface string of casing cemented in the bore thereof, a production string of casing that extends downwardly through said surface string of casing to communicate with a pressurized fluid producing geothermal zone, both of said strings of casing having upper ends, a well head assembly mounted on said upper end of surface string of casing and so maintaining said production string of casing in said well that when at least a portion of said production string of casing is anchored to a lower portion of said surface string of casing said production string of casing can expand and contract longitudinally due to variations in temperature without placing any substantial additional strain on said well head assembly, said well head assembly capable of having interior components thereof subjected to wear removed therefrom for repair or replacement without shutting down said geothermal well, said production string of casing having engageable means on said upper end thereof, said well head assembly including:

a. a vertically disposed tubular spool that has upper and lower ends and an abutment on the interior thereof, said lower end of said spool secured to said upper end of said surface string of casing;

b. a vertical tubular member that has upper and lower ends and is positioned at least partially in said spool;

c. hanger means secured to said tubular member that extend outwardly therefrom and rest on said abutment;

d. tubular means secured to said lower end of said tubular member that extend downwardly and sealingly over said upper end of production string of casing, said tubular means including engaging means on the interior thereof on which said engageable means rest to support said production string prior to the latter being anchored to said surface string of casing, with said production string of casing after being anchored capable of expanding and contracting longitudinally due to variations in temperature by said engageable means moving vertically relative to said engaging means;

e. a first valve assembly that includes a first valve body that has top, bottom and first and second side surfaces, an externally threaded head that removably engages a threaded upper portion of a first passage that is vertical and extends downwardly from said top to said bottom surface, said vertical passage defining a valve seat, a second passage that is horizontal and extends from said first passage above said valve seat through said first sidewall, a valve member slidably mounted in said first passage that can occupy either a first position where it seals with said valve seat or a second position where it is disposed above said second passage adjacent said head, said valve member of no greater diameter than said head, an externally threaded bushing that removably engages a centered tapped bore in said head, and an elongate actuator rod that extends upwardly from said valve member through said bushing, said actuator rod having an upper end;

f. a second valve assembly secured to said first sidewall of said first valve body for controlling the flow of said pressurized fluid from said well head assembly when said first valve member is in said second position;

g. an actuator assembly removably secured to said upper surface of said first valve body that removably engages said upper end of said actuator rod and moves the latter vertically to dispose said first valve member in either said first or second position;

h. an elongate inverted cup shaped member that removably but non-rotatably engages the upper surface of said head to envelop said actuator rod when said first valve member is in said second position and said actuator assembly has been removed from said first valve body;

i. a gate valve that has an elongate body that has first and second ends between which a third passage extends that has a diameter greater than that of said head, a transverse valve plate slidably supported in said gate valve body that may be moved from a first position where it is clear of said third passage to a second position where it obstructs said third passage in said gate valve body, said gate valve including means for removably securing said first end to said top surface of said first valve body;

j. a working plate removably securable to said second end of said gate valve body, said working plate having a centered opening therein through which said elongate cup shaped member extends upwardly;

k. a retrieving assembly removably mounted on said working plate for removably engaging said elongate cup shaped member to rotate the latter and unscrew said head from said first valve body and thereafter move said head, first valve member, and actuator rod upwardly until said first valve member is above said valve plate, said valve plate then being moved to said second position, whereupon said working plate may be removed from said gate valve body for said first valve member to be repaired or replaced, and said head, valve member, and actuator rod being returned to an operative position in said first valve body by reversing the procedure above described.

4,342,364

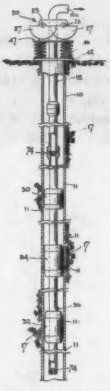
APPARATUS AND METHOD FOR COUPLING SONIC ENERGY TO THE BORE HOLE WALL OF AN OIL WELL TO FACILITATE OIL PRODUCTION

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Apr. 11, 1980, Ser. No. 139,403

Int. Cl.³ E21B *43/00*; F04B *7/00*

U.S. Cl. 166—249 **8 Claims**



1. In an oil well having a casing installed in an oil bearing bore hole, a tubing string installed in said casing, check valve means installed in said string and means for providing sonic energy to said string in a longitudinal vibration mode whereby the check valve means is vibrationally actuated by the sonic energy to pump oil up said string, the improvement being means for coupling sonic energy to the wall of said bore hole to stimulate the release of oil therefrom comprising

a plurality of annular piston means mounted along said string and the casing, at least one of said piston means being tightly fitted on said string, the outer walls of said piston means being closely spaced to the inner wall of the casing to provide dynamic liquid seals to the pumping action at the frequency of the sonic energy,

means for feeding liquid to the annular space between the piston means such that a liquid annulus is formed between successive piston means, and

perforations formed in the walls of said casing,

sonic energy being transferred from the tubing string to the piston means, the sonic energy causing the liquid annuluses to be impacted between the piston means with hydraulic pressure pulses being developed in the liquid which pulses are applied through the casing perforations to the bore hole to stimulate the release of oil therefrom.

4,342,365

SOIL CRUMBLING ROLLERS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Jul. 27, 1977, Ser. No. 819,476

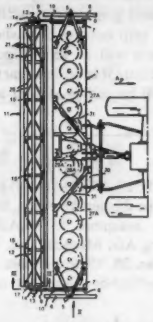
Claims priority, application Netherlands, Aug. 3, 1976, 7608610

Int. Cl.³ A01B *29/04*

U.S. Cl. 172—552 **15 Claims**

1. A soil crumbling roller comprising an elongated member having an axis of rotation and an outer periphery spaced from said axis, said periphery comprising supporting plates that mount elongated, soil-contacting elements and said elements extending in the same general direction as the axis of rotation, said elements being fastened to said plates and said plates being positioned at spaced apart intervals along the length of the axis of rotation of said roller, said plates having edge projections that comprise fastening sites for said elements and each plate having a sawtooth configuration when viewed from the side,

shorter edges of the teeth comprising radial folds of the plate and oblique portions interconnecting said folds, said elements



being fastened to respective projections and the latter being spaced from said folds.

4,342,366

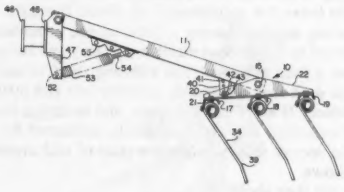
SOIL MULCHER

Dale C. Schenk, and Harold D. Ralph, both of Hamilton, Canada, assignors to International Harvester Co., Chicago, Ill.

Filed Jan. 26, 1981, Ser. No. 228,045

Int. Cl.³ A01B *23/02*

U.S. Cl. 172—643 **9 Claims**



1. A soil mulcher comprising:

(a) a longitudinal connecting member having one end adapted for connection to a mobile power source;

(b) a beam member extending transversely of said connecting member, said beam member having a downwardly opening generally channel configuration;

(c) means interconnecting said longitudinal member and said beam member;

(d) a generally curved bar located in said beam member between said channel configuration and spaced therefrom;

(e) mounting means for connecting said curved bar to a channel wall facing the mobile power source; and

(f) a spring tooth structure having a pair of spaced axially aligned coil portions and an intervening connector portion pivotally mounted on said curved bar with said coil portions surrounding said curved bar, said coil portions and said connector portion also being spaced from said channel configuration, said structure having tooth portions extending downwardly from the endmost convolutions of said coil portions, said intervening connector portion engaging said mounting means when the mulcher is towed and said tooth portions engage the soil and said coil portions wind up on said curved bar, said intervening connector portion moving away from said mounting means until said tooth portions adjacent the endmost convolutions contact said channel wall when the mulcher is backed up with the tooth portions in the soil.

4,342,367

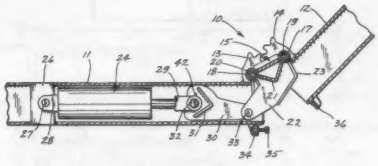
FOLDING TOOL BAR

Donald C. Gates, Fargo, N. Dak., assignor to Alloway Manufacturing, Inc., Fargo, N. Dak.

Filed Oct. 21, 1980, Ser. No. 199,356

Int. Cl.² A01B *73/00*

U.S. Cl. 172—776 **11 Claims**



11. A folding tool bar apparatus for a farm implement or the like comprising:

a hollow main frame;

a wing section pivotally attached to one end of said hollow main frame between a first horizontally extending position and a second horizontal folded position; and

floating hinge point actuation means for moving said wing section between said first and second positions, said floating hinge point actuation means comprising:

first teeth means attached to said hollow main frame,

second teeth means attached to said wing section for meshing with the first teeth means,

bracket means pivotally attached to said first and second teeth means, the pivotal attachment of said bracket means to said first and second teeth means including a plurality of pivot means one of which is disposed between said main frame and said bracket means, and another of which is disposed between said wing section and said bracket means, for providing relative pivotal movement between the main frame, bracket means and wing section,

a lever arm spaced from said one and said another of said plurality of pivot means and attached to said bracket means, and

power means disposed at least partially within said hollow main frame means for moving said lever arm between a first position, corresponding to the first position of said wing section, wherein the power means is disposed within said main frame, to a second position corresponding to the second position of said wing section.

4,342,368

ROTARY DRILLS AND DRILL BITS

Dennis Denman, Retford, England, assignor to Kennametal Inc., Latrobe, Pa.

Continuation of Ser. No. 934,875, Aug. 17, 1978, abandoned. This application Dec. 8, 1980, Ser. No. 214,668

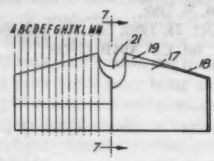
Claims priority, application United Kingdom, Aug. 18, 1977, 34758/77

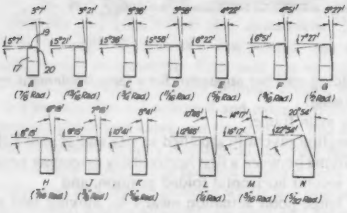
Int. Cl.³ E21B *10/46*

U.S. Cl. 175—410 **6 Claims**

1. A rotary drill bit including a drill tip having a frontal face, inclined with respect to a plane normal to the axis of rotation of the bit, a leading face, inclined with respect to a plane containing the axis of rotation of the bit, and a cutting edge extending outwardly away from the axis of rotation and defined by the intersection of said frontal face and said leading face, the angles which said frontal and leading faces make with said planes respectively both decreasing as said faces extend away from the axis of rotation of the bit, the decrease in the angle of said frontal face being such that the angle between the frontal face and the path of movement of the cutting edge, for a predetermined rotational speed and drilling rate, is substantially the same at all points along the length of the cutting edge, and the

decrease in the angle of said leading face being such that, for the same predetermined rotational speed and drilling rate, the





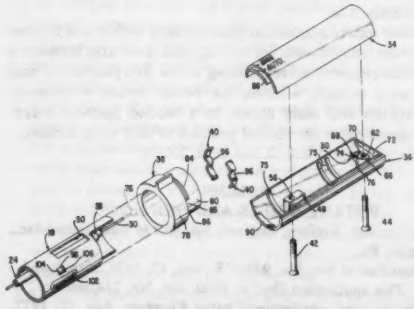
leading face is normal to the path of movement of the cutting edge at all points along the length of the cutting edge.

4,342,369

CONTROL GRIP FOR ANSATE SELF-PROPELLED APPLIANCE

Frederick J. Ransom, Dunwoody, Ga., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 23, 1980, Ser. No. 199,882
Int. Cl.³ A47L *9/32*; B62D *51/04*
U.S. Cl. 180—19 H **2 Claims**



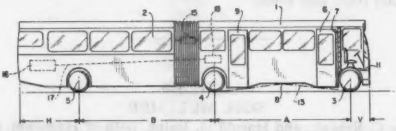
1. In an ansate self-propelled appliance having a drive motor and a reversible transmission mounted on a chassis for driving at least one chassis mounted wheel, a control or hand grip mounted on the handle comprising a pair of clam-shell halves having at least one inwardly extending boss, a guide perforation on the handle into which said boss extends providing limited sliding movement of said handle forward and aft and a locking collar structurally associated with at least one of said hand grip halves so as to be rotatable relative thereto while restrained against movement longitudinal relative thereof, said locking ring carrying at least one inwardly extending spring detent to selectively cooperate with a pair of angularly spaced apart recesses provided on said handle tube angularly offset one from the other, one of said recesses being of a length substantially coextensive with said detent spring so that when said detent spring is engaged therein, said hand grip is latched thereby against longitudinal sliding movement, the other of said recesses being elongated so that when said detent spring is engaged therewith, said hand grip control is slidable along the handle tube when pushed or pulled by an operator, and means for connecting said hand grip control with the transmission so that when said hand grip control is pushed forwardly by an operator said appliance will be self-propelled forwardly and when said hand grip control is pulled rearwardly by an operator said appliance will be self-propelled in a rearward direction.

4,342,370

ARTICULATED OMNIBUS

Faust Hagin, and Hans-Jürgen Drewitz, both of Munich, Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nuernberg AG, Munich, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,524
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814112
Int. Cl.³ B62D *31/002*
U.S. Cl. 180—22 **3 Claims**



1. An articulated omnibus, comprising:

a leading member having a forward end, a rear end, a lower edge, a first axle located such that said forward end overhangs a distance V beyond said first axle, and a second axle located at a distance A aft of said first axle;

a trailing member having a forward end articulately connected to said leading member rear end, and having a rear end, a third axle located at a distance B aft of said second axle such that said trailing member rear end overhangs a distance H aft of said third axle, and an engine located aft of said third axle and operatively connected for driving said second axle, wherein the ratio of said distance is as follows:

V is less than about 1/6 A,

A:B is about 1:1, and

H is less than about ½ B;

a front wheel housing located in said leading member above said first axle, and a forward passenger entrance located immediately adjacent and to the rear of said front wheel housing, said lower edge being lower in the vicinity of said forward passenger entrance than in an area centrally-located between said first and second axles; and

a driver's seat located above said front wheel housing.

4,342,371

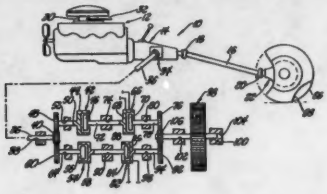
VEHICULAR ENERGY STORING MEANS AND SYSTEM

Marion L. Smitley, Birmingham, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Continuation of Ser. No. 796,754, May 13, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 31,311
Int. Cl.³ B60K *9/04*
U.S. Cl. 180—165 **16 Claims**

1. An energy storing and supplying system for a vehicle having a prime mover and surface-engaging vehicular propelling drive wheel means, comprising vehicular primary power transmitting means operatively interconnecting said prime mover and said wheel means, a flywheel, and secondary power transmitting means operatively connected to said drive wheel means and to said flywheel, said secondary power transmitting means comprising a first secondary drive train and a second secondary drive train in parallel operating relationship to each other and being effective during a first condition of operation

of said vehicle for transmitting energy from said vehicle drive wheel means through only one of said drive trains and into said flywheel as to thereby impart rotation to said flywheel, said secondary power transmitting means also being effective dur-



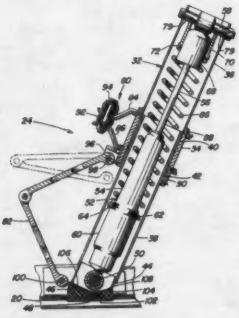
ing a second condition of operation of said vehicle for transmitting energy from said flywheel during its rotation through only the other of said drive trains and into said drive wheel means as to at least assist in propelling said vehicle.

4,342,372

TELESCOPIC STRUT SUSPENSION FOR SNOWMOBILE SKIS

Stanley G. Hayes, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Apr. 16, 1980, Ser. No. 140,730
Int. Cl.³ B62B *17/04*
U.S. Cl. 180—182 **6 Claims**



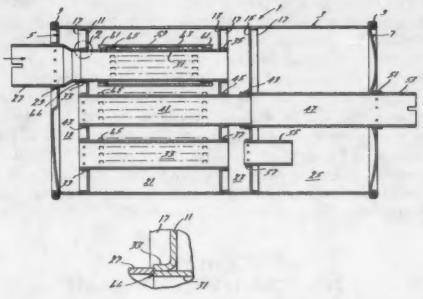
1. In a snowmobile having a pair of steerable skis respectively connected in supporting relationship to a forward portion of a frame by a pair of suspensions, the improvement wherein each suspension, comprises: a support tube forming a forward portion of the frame; a guard tube reciprocably and rotatably mounted in the support tube and having a lower end connected to one of the pair of skis; steering means operatively connected to the guard tube for selectively turning the latter within the support tube to effect steering of the snowmobile; an extensible and retractable shock absorber exclusive of the guard tube and including a cylinder located entirely within and completely spaced from the guard tube whereby the guard tube may become dented without affecting the operation of the shock absorber; said cylinder having an end connected to the one of the pair of skis; said shock absorber further including a piston rod having an end fixed directly to the frame; a coil compression spring received over the shock absorber and mounted to yieldably resist retraction of the shock absorber; said spring being located to extend coextensively with at least one-half of the length of the cylinder.

4,342,373

MUFFLER WITH THREE PART WELDED JOINT

Ernest A. Erickson, Sturtevant, Wis.; Rodger D. Hanson, Jackson, and Lance D. Mews, Clark Lake, both of Mich., assignors to Tenneco Inc., Deerfield, Ill.

Filed Mar. 17, 1981, Ser. No. 244,694
Int. Cl.³ F01N *1/08;* B23K *31/02;* F16L *13/02*
U.S. Cl. 181—266 **5 Claims**



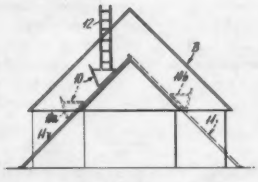
1. An acoustic muffler for hot flowing gases such as combustion engine exhaust gases comprising an outer shell, an internal member having an annular neck, said neck having an annular end edge, a first tube supported inside said neck and having an annular end edge substantially flush and coplanar with the end edge of the neck, a second tube in said muffler substantially coaxial with said neck and first tube and having an annular end edge in abutment with the end edges of both the neck and first tube, said internal member and said first and second tubes being made of low carbon steel, and a weld zone at the interface of said edges uniting each of said ends to each of the other two ends and with said neck and first tube end edges in abutment with the end edge of the second tube, said weld zone having a substantially homogeneous microstructure of the type produced by a magnet arc weld process characterized by substantial freedom from martensite and from embrittling deposits in the grain boundaries of ferrite grains.

4,342,374

LADDER SUPPORT

Antonio Montana, 5 Gates Ave., Ossining, N.Y. 10562

Filed Dec. 29, 1980, Ser. No. 220,763
Int. Cl.³ E06C *7/16;* E04G *3/00*
U.S. Cl. 182—45 **4 Claims**



1. A ladder support for attachment to an inclined ladder to support a second ladder extending upwardly therefrom comprising an elongated base member adapted to lie against and span a plurality of rungs of said inclined ladder, said base member including a pair of spaced channels and plates secured to the ends of said channels to hold them in spaced relaship, hook means carried by the upper end of said base when in position on said inclined ladder for securing it to at least one of the rungs of the last said ladder, an elongated channel-shaped platform having upwardly extending leg portions hinged at one end to the upper end plate of said base when positioned on

said inclined ladder, a strut assembly including a pair of independent elongated spaced members each hinged at one end to the lower end plate of said base, said members each having a plurality of holes disposed along the length thereof with the holes of one member being aligned with the holes of the other member, said platform channel having aligned openings in said legs and adjoining said other end thereof, a U-shaped handle secured to and extending from the free ends of said members to maintain them in parallel relationship, said handle extending beyond the adjoining plate on the base member when the base member, channel-shaped platform and struts are in the folded position for carrying the support to facilitate access to said handle for carrying said support, a locking pin engaging said platform openings and a selected set of openings in said members to maintain said platform in a substantially horizontal position when affixed to said inclined ladder, said platform including a second set of openings aligned with a set of openings on said strut assembly when the support is in the folded position to receive said locking pin to hold the support in the folded position and thereby providing a highly portable support readily transported by said handle.

4,342,375

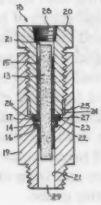
POROUS ROD METERING VALVE

Frank J. Lyden, Manitowoc, Wis., assignor to Oil-Rite Corporation, Manitowoc, Wis.

Continuation-in-part of Ser. No. 595,118, Jul. 11, 1975, Pat. No. 4,062,424. This application Dec. 7, 1977, Ser. No. 858,200

Int. Cl.³ F16N *27/00*

U.S. Cl. 184—65 **8 Claims**



1. In a lubricant metering valve having a through bore with an inlet at one end thereof and an outlet at the other end and comprising engaging male and female valve members, a porous rod disposed in said bore and being provided with radially projecting means to form an annular shoulder intermediate the length of the rod, an impervious sleeve tightly enveloping said rod and extending over at least a portion of the length thereof, and an annular sealing member disposed on the rod in engagement with said shoulder and said sleeve and the wall of the valve bore, said sealing member being compressed into proper sealing mode with assembly of the valve members to secure the rod and sealing member within the valve and preclude passage of lubricant through the valve except by passage through the porous rod.

4,342,376

ADJUSTABLE CONSTANT LEVEL OILER AND TOOL FOR MAKING ADJUSTMENTS

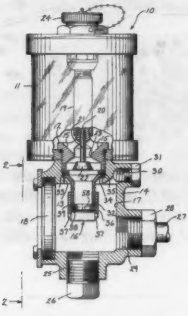
Frank J. Lyden, Manitowoc, Wis., assignor to Oil-Rite Corporation, Manitowoc, Wis.

Filed Jan. 7, 1980, Ser. No. 110,180

Int. Cl.³ G05D *9/02*; F01M *11/12*

U.S. Cl. 184—103 R **4 Claims**

1. In a constant level oiler, a reservoir for oil lubricant, a lubricant chamber beneath the reservoir and having vent means spaced above the lubricant level in said chamber to provide a surge space, conduit means placing the reservoir in communication with the lubricant chamber, valve means in said conduit means to selectively close the conduit means to preclude lubricant flow between the reservoir and the lubricant chamber, said conduit means including a nozzle assembly projecting downwardly into the lubricant chamber and serving to establish the operating level of the oil lubricant in the chamber, said nozzle assembly comprising a pair of threadedly engaged tubular members with one of said members being



generally fixed and the other of said members projecting downwardly beyond the free end of the fixed member and being movable vertically relative to the fixed member to provide for adjustment of the operating level of the oil lubricant in said chamber, and means to lock the nozzle assembly members together in any desired position of adjustment.

4,342,377

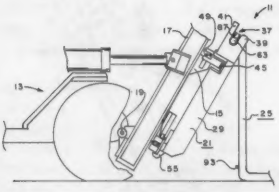
FORK ATTACHMENT MEANS FOR LIFT TRUCKS

Nolen R. Goodwin, Louisville, Miss., assignor to Taylor Machine Works, Inc., Louisville, Miss.

Filed Jun. 30, 1980, Ser. No. 164,333

Int. Cl.³ B66B *9/20*

U.S. Cl. 187—9 R **7 Claims**



1. A fork attachment means for a fork lift truck having a carriage, said fork attachment means comprising:

(a) frame means for being attached to the carriage of the fork lift truck, said frame means including first and second side frame members, each of said side frame members having an upper end and having a notch in said upper end thereof; and

(b) fork means for being removably attached to said frame means, said fork means including an elongated shaft member and including a plurality of fork members attached to said shaft member, said shaft member having a first end for being selectively positioned in said notch of said first side frame member and having a second end for being selectively positioned in said notch of said second side frame member to attach said fork means to said frame means, said fork means including alignment means for coacting with said notch in said upper end of one of said side frame members and for properly aligning said shaft member with respect to said frame means, said fork means including a plurality of bushing members for pivotally and slidably mounting each of said fork members to said shaft member, an outwardly directed peg member being fixedly attached

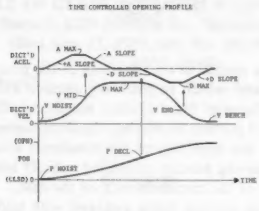
to each bushing member, and said fork means including an elongated fork indexing bar member for being attached to said shaft member and for spacing said bushing members along said shaft member, said bar member having a plurality of spaced slots for receiving said peg members.

4,342,378

ELEVATOR DOOR MOTION BENCH VELOCITY

Michael W. Hmelovsky, Warehouse Point, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Dec. 27, 1979, Ser. No. 107,694
Int. Cl.³ B66B *13/08*
U.S. Cl. 187—29 R **3 Claims**



1. Elevator door apparatus, comprising:

a motor driven elevator door mechanism;

demand means for providing signals indicative of demands to open or close said elevator door;

position means providing signals related to the position of said elevator door; and

control means for controlling said door mechanism in response to said demand signals and said position signals; characterized by:

said position means comprising a transducer for providing signals which vary as a function of the position of said door mechanism; and

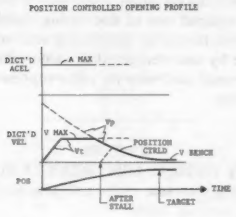
said control means comprising cyclically operative signal processing means for providing, in response to said transducer, signal indications of the position and velocity of said door, for providing profile signals defining a desired door traverse dictated velocity profile to accelerate the door with a desired rate of increasing acceleration to a desired maximum acceleration, accelerate the door at said desired maximum acceleration, accelerate the door with a desired rate of decreasing acceleration to a desired maximum velocity, move the door at said maximum velocity, decelerate the door with a desired rate of increasing deceleration to a desired maximum deceleration, decelerate the door at said desired maximum deceleration, and decelerate the door with a desired rate of decreasing acceleration to a desired final bench velocity, for providing an ending velocity signal, indicative of a dictated velocity at which said profile is to become responsive to the one of said profile signals defining said desired rate of decreasing deceleration, in response to ones of said profile signals defining said desired rate of decreasing deceleration, said desired maximum deceleration and said desired final bench velocity, and for providing, in each of a series of cycles throughout a period of time equal to the desired door traverse time, unipolar motion command signals to said elevator door mechanism in response to the difference between said door velocity signal indication and a dictated door velocity signal provided in response to said profile signals and said ending velocity signal.

4,342,379

TIME CONTROLLED ELEVATOR DOOR MOTION

John E. Games, Granby, and Michael W. Hmelovsky, Warehouse Point, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Dec. 27, 1979, Ser. No. 107,695
Int. Cl.³ B66B *13/08*
U.S. Cl. 187—29 R **2 Claims**



1. Elevator door apparatus, comprising:

a motor driven elevator door mechanism;

demand means for providing signals indicative of demands to open or close said elevator door;

position means providing signals related to the position of said elevator door; and

control means for controlling said door mechanism in response to said demand signals and said position signals; characterized by:

said position means comprising a transducer for providing signals which vary as a function of the position of said door mechanism; and

said control means comprising cyclically operative signal processing means for providing, in response to said transducer, signal indications of the position and velocity of said door, and, in response to said demand means and said position and velocity signal indications, for providing, in each of a series of cycles throughout a period of time equal to the desired door traverse time, a dictated door velocity signal equal to the velocity which the door is desired to have during such cycle in accordance with a desired door traverse velocity profile derived from values of desired rates of acceleration and deceleration and desired maximum velocity, acceleration and deceleration, and cyclically providing motion command signals to said elevator door mechanism in response to the difference between said dictated velocity signal and said door velocity signal indication;

said signal processing means comprising means for calculating said dictated door velocity signal in each of said cycles in response to signals representing said desired rates of acceleration and deceleration and said desired maximum velocity, acceleration and deceleration, and means for providing said dictated velocity signal by increasing an initial velocity value in each cycle by an acceleration value which begins at zero and increases in each cycle at a desired rate of increasing acceleration until said acceleration value represents said desired maximum acceleration, thereafter increasing said velocity value in each cycle by said desired maximum acceleration value until said velocity value achieves a first value from which it can be increased to a value representing said desired maximum velocity by an acceleration value which decreases in each cycle at a desired rate of decreasing acceleration until it reaches zero, thereafter increasing said velocity value in each cycle by said acceleration value which decreases in each cycle until said velocity value represents said desired maximum velocity, thereafter holding said velocity value constant in each cycle until said position signal indication represents a deceleration position of said door from which said door can be decelerated to a desired final velocity in response to said dictated velocity signal when said dic-

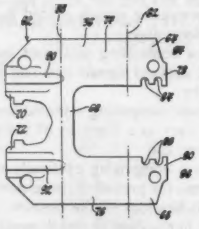
tated velocity signal is provided as follows, thereafter decreasing said velocity value in each cycle by a deceleration value which begins at zero and increases in each cycle at a desired rate of increasing deceleration until said deceleration value represents said desired maximum deceleration, thereafter decreasing said velocity value in each cycle by said desired maximum deceleration value until said velocity value achieves a second value from which it can be decreased to a value representing said desired final velocity by a deceleration value which decreases in each cycle at a desired rate of decreasing deceleration until it reaches zero, thereafter decreasing said velocity value in each cycle by said deceleration value which increases in each cycle until said velocity value represents said desired final velocity.

4,342,380

LIGHT WEIGHT DISC BRAKE CALIPER

Wolfgang Melinat, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 29, 1980, Ser. No. 191,361
Int. Cl.³ F16D *55/224*
U.S. Cl. 188—71.1 **3 Claims**



1. A composite caliper characterized by light weight and high strength for use in a disc brake and having one side formed by a sheet steel portion adapted to form a bridge for the caliper and the other side formed by a cast metal portion adapted to define a piston chamber for the caliper,

said sheet steel bridge portion having an initial generally flat H-shape defined by first and second sets of legs and a cross-piece of predetermined strength preformable therefrom into a generally inverted U-shape by bending along a first axis extending through said cross-piece and along a second axis parallel to said first axis and spaced from said cross-piece, one side of the inverted U-shape including said first set of legs integrally cast within said cast metal portion to form an anchor therewith and to place the other side of the inverted U-shape including said second set of legs opposite the piston chamber for receiving a brake disc therebetween, said one side of the inverted U-shape being configured to enhance the integrity of the anchor between said sheet steel portion and said cast metal portion while the other side of the inverted U-shape is configured to enhance the predetermined strength of the sheet steel portion and cooperating thereby to effect the light weight, high strength characteristics of said caliper.

4,342,381

DISC BRAKE

Koichi Tamura, Tokyo, Japan, assignor to Tokico Ltd., Japan

Filed Jan. 18, 1980, Ser. No. 113,269
Claims priority, application Japan, Jan. 19, 1979, 54-5684[U]
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.38 **3 Claims**

1. A disc brake comprising:

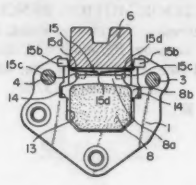
a stationary member including a guide portion, adapted to be secured to a non-rotatable part of a vehicle.

a caliper mounted on the stationary member displaceably in the direction of the rotational axis of a rotatable disc,

a pair of friction pads disposed on the opposite sides of the disc, at least one of which being supported on the guide portion of the stationary member to slide in the direction of the rotational axis of the disc, and

a pad spring acting between the caliper and said at least one friction pad to bias the friction pad toward the guide portion of the stationary member,

wherein said pad spring is formed of sheet metal and comprises two generally channel shaped supporting portions



which are spaced in the direction of the circumference of the disc and which respectively receive axially opposite outer surfaces of the stationary member within said channel shaped portion to prevent the displacement of the pad spring in the direction of the rotational axis of the disc, and a retaining portion extending radially inwardly in the direction of the circumference of the disc,

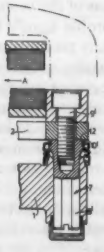
said retaining portion being engaged with said at least one friction pad when the sliding movement of said friction pad in the direction of the axis of the disc exceeds a predetermined amount.

4,342,382

TWIN-PIN SLIDING CALIPER DISC BRAKES

Heinrich B. Rath, Vallendar, and Hans J. Wienand, Steimel, both of Fed. Rep. of Germany, assignors to Lucas Industries Limited, Birmingham, England

Filed Jan. 25, 1980, Ser. No. 115,388
Claims priority, application United Kingdom, Jan. 25, 1979, 7902702; Jun. 16, 1979, 7920928
Int. Cl.³ F16D *65/00*
U.S. Cl. 188—73.45 **10 Claims**



1. A twin pin sliding caliper disc brake comprising a caliper having two bores therein, and a torque taking member having two parallel pins, said caliper being slidably mounted on the torque taking member on said two parallel pins each of which is slidably engaged in a respective one of said bores in the caliper, one of said pins being fixedly secured to the torque taking member so that it is immovable relative to the torque taking member, and the other one of said pins being laterally movable to a limited extent relative to the torque taking member for adjustment of said other pin so that it can be adjusted to engage simultaneously and positively the same predetermined side of its bore in said caliper as does the fixed pin in its bore,

the movable pin having a friction surface and means securing the friction surface of said movable pin in frictional engagement with said torque taking member after adjustment of said movable pin to engage said predetermined side of its bore whereby braking drag forces are positively shared between both pins during all normal brake operations and if the torque taking member flexes under heavy braking the frictional engagement between the movable pin and the torque taking member can be overcome so that the movable pin is moved relative to the torque taking member to prevent jamming of said pins in caliper bores.

4,342,383

METHOD AND APPARATUS FOR CONTROLLING THE FALL OF GRAIN THROUGH A CONDUIT

William C. Burnett, 6229 Malloch Dr., Memphis, Tenn. 38138

Filed Apr. 17, 1980, Ser. No. 141,154

Int. Cl.³ B65G *11/20*

U.S. Cl. 193—32 **17 Claims**

1. A method of reducing the velocity of a stream of grain which is falling in a downwardly inclined conduit, said method comprising,

interposing an array of downwardly and inwardly sloping blades in the path of the falling stream in the conduit at a position in which the velocity of the stream is in excess of about 1000 feet per minute, the blades slowing the movement of the grain particles and deflecting them toward the axis of the conduit,

providing a central opening between lower ends of the blades,

yieldably biasing the blades inwardly, in a direction tending to reduce the size of said opening, the blades restricting the fall of the particles and slowing their movement through the central opening so that a mass of particles accumulates above said blades and opening, and

continuously discharging particles from the accumulated mass through said opening,

while varying the size of the opening between the blades as the weight of the accumulated mass of particles above said opening changes with flow rate variations, to increase the size of the opening as the weight of the mass increases in response to an increase in the flow rate of the stream, and thereby to release particles from said mass more rapidly as the weight increases.

4,342,384

MEDAL REMINANT SLOT MACHINE GAMES

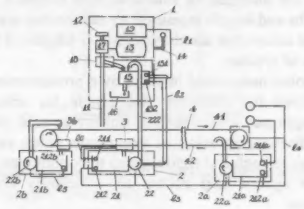
Motonobu Fukase, Tanashi; Toshikazu Yokota, and Masahisa Oura, both of Sayama, all of Japan, assignors to Sayama Precision Industrial Co., Ltd., Sayama, Japan

Filed May 8, 1980, Ser. No. 148,049

Claims priority, application Japan, May 17, 1979, 54-64923[U]

Int. Cl.³ G07D *9/00*

U.S. Cl. 194—1 C **6 Claims**



1. Coin ruminant slot machine games comprising a combination of a plurality of slot machines, back feeders, blockaders and a belt conveyer, the slot machines being operatively coupled respectively with the back feeders, the back feeders being operatively coupled respectively with the blockaders, the slot machines being located above the belt conveyer, the back feeders being located below the belt conveyer, the blockaders being located adjacent the upper surface of the lower section of the belt conveyer, the aforesaid components being cooperatively arranged so that the slot machines discharge the coins onto the upper section of the belt conveyer, the back feeders feed the coins back up to the slot machines and upper and lower sections of the belt conveyer, and the blockaders move down onto the lower belt section to guide the coins off of the lower belt section into the back feeders, and means to operate the belt conveyer, back feeders and blockaders.

4,342,385

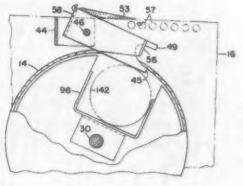
ARTICLE ACTUATED COIN DISPENSING MACHINE

Arthur H. Kaspar, Box 667, Shiner, Tex. 77984

Filed Dec. 17, 1979, Ser. No. 104,544

Int. Cl.³ G07F *7/06*

U.S. Cl. 194—4 D **15 Claims**



11. A machine for activating a trigger means upon receipt of an article belonging to a defined class of acceptable articles which comprises:

a housing;

an article opening in said housing for receiving said articles;

carriage means adapted for carrying said articles, said carriage means being located within said housing for receiving said articles through said article opening and movable within said housing;

first stop means located to engage said carriage means to stop movement of said carriage means in a first direction at at least one selected point;

movable check means located within said housing for checking at least one width of said article and for disengaging

said first stop means from said carriage means if said article is determined by said check means to be within said defined class of acceptable articles;

trigger means operable in response to sufficient movement of said carriage means in said first direction;

at least two movable probes for testing said article, said probes being located within said housing and arranged to test said article along at least two portions of said article for article width and to test at least one portion of said article for article length; and

means for disengaging said first stop means if the article widths and length measured by said probes are within the set of acceptable article widths and lengths of the defined class of articles;

said probes maintained in place by a predetermined amount of force for checking said article for article surface strength and article surface rigidity by said check means not disengaging said first stop means unless said article is strong enough and rigid enough to communicate sufficient force against said probes to sufficiently displace said probes;

a testing end of at least one of said probes sufficiently pointed to test the surface of said article for resistance to penetration and adapted to prevent articles having insufficient resistance to penetration by the pointed probe from being rotated past the pointed probe; and

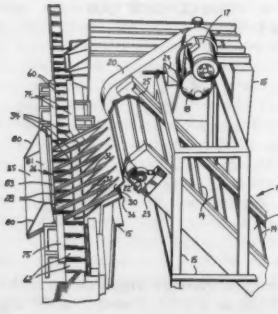
said pointed probe positioned to direct said point of said pointed probe at an opposing angle to movement of said article in saio first direction to penetrate any said article of insufficient surface strength, surface rigidity or surface smoothness.

4,342,386

ARTICLE DISTRIBUTING APPARATUS

Mieczyslaw Budzich, and Forest G. Fitz, both of Lexington, Harold S. Moss, Columbia, all of S.C. assignors to Nassau Recycle Corp., Staten Island, New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,613
Int. Cl.³ B65G *47/66*
U.S. Cl. 198—360 **8 Claims**



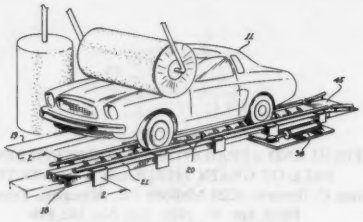
1. Apparatus for distributing articles comprising a conveyor having a set of mutually spaced rollers; a ramp inclined upwardly from said set of mutually spaced rollers; an array of mutually spaced bars aligned between said rollers; means for raising and lowering said array of bars between a lowered position beneath said rollers and at least a lower portion of said ramp and a raised position above said rollers and said lower portion of said ramp, and means for successively gravity feeding articles onto said ramp.

4,342,387

METHOD AND APPARATUS FOR LINEARLY CONVEYING WHEELED VEHICLES

James H. Gray, Phoenix, Ariz., assignor to Research Associates, Ltd., Phoenix, Ariz.

Continuation-in-part of Ser. No. 576,169, May 5, 1975, Pat. No. 4,039,075. This application Apr. 28, 1977, Ser. No. 791,961
The portion of the term of this patent subsequent to Aug. 2, 1994, has been disclaimed.
Int. Cl.³ B65G *25/10*
U.S. Cl. 198—746 **19 Claims**



1. A method for longitudinally advancing a vehicle through a predetermined distance, said vehicle being carried by at least a first pair and a second pair of independently rotatable wheels, said method comprising the steps of:

supporting one wheel in said first pair of independently rotatable wheels on a movable elongated plate while supporting the other wheel in said first pair of independently rotatable wheels on a stationary surface;

longitudinally reciprocating said plate between a forward position and a rearward position, the length of said reciprocation being substantially less than said predetermined length;

blocking the one wheel in said first pair of wheels to prevent both rotation of the one wheel and relative longitudinal movement between the one wheel and said plate as said plate moves toward its forward position;

maintaining the forward advancement of the one wheel in said first pair of wheels while permitting the one wheel to both rotate and move longitudinally relative to said plate as said plate moves toward its rearward position; and

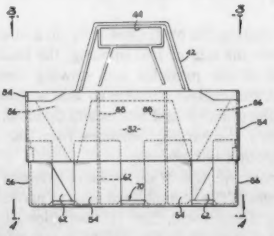
selectively omitting said blocking step to temporarily inhibit the forward advancement of said vehicle.

4,342,388

STACKABLE BOTTLE CARRIER

Thomas E. Torokvei, Don Mills, Canada, assignor to Scepter Manufacturing Co., Ltd., Toronto, Canada

Filed Sep. 7, 1979, Ser. No. 73,234
Int. Cl.³ B65D *75/00, 21/00, 85/62*
U.S. Cl. 206—203 **27 Claims**



1. A bottle carrier comprised of two slidably engaged, telescoping members, the first member being comprised of a pair

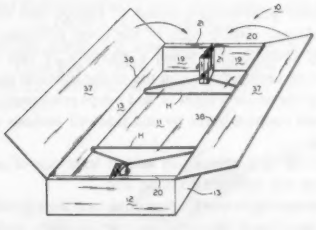
of facing side walls and a pair of facing end walls, the ends of said side walls attached to the adjacent ends of said end walls; a central dividing means extending from about the vertical center line of one of said end walls to about the vertical center line of the other; handle means extending upwards from said central dividing means; and partition walls cooperating with said central dividing means, said side walls and said end walls to form the upper region of a plurality of cells for receiving bottles; and the second member being comprised of a bottom panel, said bottom panel having an opening extending at least part way along the central axis which runs across its length; side and end panels extending upwards from the periphery of said bottom panel; and partition panels cooperating with said bottom, side and end panels to form the lower region of said plurality of cells for receiving bottles; said central dividing means and said opening communicating together and each being configured to receive the handle means of a similar empty bottle carrier positioned below in stacked relationship, said first and second members having cooperatively engaging means for allowing limited telescoping movement of said first and second members between a first predetermined relative position whereby said second member extends substantially below said first member to provide said plurality of cells as defined by said first and second members with a substantial height and a second predetermined relative position whereby said first and second members are substantially nested together to substantially reduce the height of said bottle carrier.

4,342,389

CONTAINER WITH INTEGRAL HANGER BAR

Billy R. Bethune, and Charles C. Dearing, both of Chattanooga, Tenn., assignors to Container Corporation of America, Chicago, Ill.

Filed Feb. 19, 1981, Ser. No. 235,908
Int. Cl.³ B65D *85/18*
U.S. Cl. 206—288 **8 Claims**



1. In a container for shipping articles such as hanger supported garments, said container being formed from a blank of paperboard or the like and comprising:

(a) a bottom panel having opposed end and side walls foldably connected to said bottom panel to define a tray;

(b) flaps extending from ends of said side walls and having portions extending along the inner face of an end wall;

(c) a pair of inner locking walls foldable with respect to an end wall and foldable into locking position with said bottom panel with said portions of said flaps embraced therebetween, the proximate ends of said locking walls being spaced from each other to define a slot; and

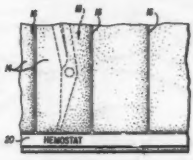
(d) distal portions of said flaps extending through said slot and being folded to position to define a hanger bar for garments.

4,342,390

APPARATUS FOR HOLDING AND PROTECTING STERILIZABLE INSTRUMENTS

James G. Mitchell, and Winalee G. Mitchell, both of 110 Secor Woods La., Perrysburg, Ohio 43551

Filed Jan. 22, 1980, Ser. No. 114,167
Int. Cl.³ B65D *83/10*
U.S. Cl. 206—363 **15 Claims**



1. An improved apparatus for holding and protecting sterilizable instruments, comprising:

a first layer of sterilizable material;

a second layer of sterilizable material overlying a portion of said first layer and being made from a thermally fusible foam material;

a plurality of seams joining said layers and defining a plurality of open-end pockets between said layers; and

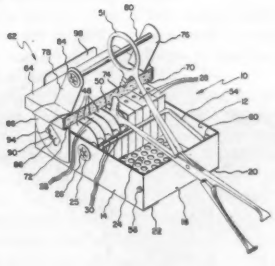
means adjacent said pocket, said means comprising a portion of said second layer of foam material in which portion the foam is fused to provide an exterior writing surface for marking with a conventional writing instrument.

4,342,391

INSTRUMENT COUNT MEMORIZER

Herbert Schainholz, 316 Locust St., Teaneck, N.J. 07666

Filed Feb. 9, 1981, Ser. No. 232,917
Int. Cl.³ B65D *85/62*; A61L *3/02, 19/02*; B65D *83/10*
U.S. Cl. 206—370 **16 Claims**

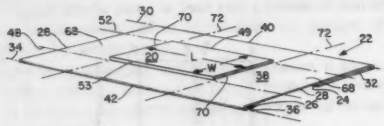


1. A count memorizing device for instruments of the type having at least one handle for manual manipulation thereof comprising, a carrier for storing a plurality of said instruments, a plurality of boots disposed in said carrier and individually movable from open to closed positions, each of said boots when in said open position having means for receiving the handle of a discrete instrument to hold said instrument in an outwardly extending position, and locking means operative to maintain said boots in selected open and closed positions, the number of open boots indicating the number of instruments selected to be stored by said carrier.

4,342,392
WRAP FOR STERILE ARTICLES

Lloyd A. Cox, Memphis, Tenn., assignor to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed Sep. 10, 1979, Ser. No. 73,971
Int. Cl.[3] A61F *15/00*
U.S. Cl. 206—438 10 Claims

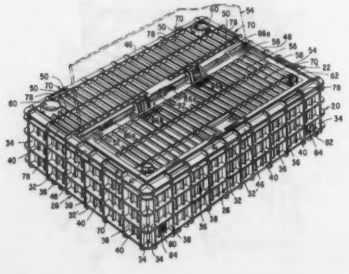


1. A wrap for a sterile article which permits unfolding of the wrap from one side without reaching into the article's sterile field comprising a bottom panel having top, bottom and side edges and situated underneath said sterile article; a first panel folded inwardly on a first fold line corresponding to the top edge of said bottom panel, said first panel having top, bottom, and side edges, said first fold line corresponding to said top edge of said first panel and said first panel being superimposed atop said article and said bottom panel; a second panel folded outwardly on a second fold line corresponding to the bottom edge of said first panel, said second panel having top, bottom and side edges, and being superimposed over said first panel, said bottom edge of said second panel corresponding to said second fold line; a third panel folded underneath said bottom panel on a third fold line corresponding to the top edge of said second panel, said third panel having top, bottom and side edges, said top edge of said third panel corresponding to said third fold line; a fourth panel folded inwardly atop said sterile article on a fourth fold line corresponding to the bottom edge of said bottom panel, and being superimposed on top of said article and said bottom panel.

4,342,393
STACKABLE POULTRY COOP

Thomas Box, Shrewsbury, N.J., assignor to Spectrum International, Inc., Shrewsbury, N.J.

Filed Aug. 25, 1980, Ser. No. 180,815
Int. Cl.[3] B65D *21/02, 1/30, 43/16*
U.S. Cl. 206—504 29 Claims



1. A stackable coop comprising:

upper and lower wall sections joined by a plurality of sidewall sections to form an enclosure, said plurality of sidewall sections being disposed about and joined to said upper and lower wall sections, said plurality of sidewall sections including first and second sidewall sections which are oppositely disposed, and at least one of said upper, lower and sidewall sections including an opening therein;

complementary male and female locking members disposed on the outer surface of each of said first and second sidewall sections, each of said male locking members extending outwardly away from the outer surface of said sidewall section a first predetermined distance, and each of said female locking members extending outwardly away from the outer surface of said sidewall section a second predetermined distance, each of said male locking members being sized to be mateably received within one of said female locking members, and said male and female locking members being disposed in predetermined positions on said first and second sidewall sections so that when a plurality of said coops are arranged in side-by-side relationship with said first sidewall sections of said coops being juxtaposed and substantially in abutting relationship to said second sidewall sections of coops, said male locking members on said first and second sidewall sections of said juxtaposed coops are mateably received in said female locking members on said second and first sidewall sections of said juxtaposed coops respectively, to lock said juxtaposed coops together, the amount of overlap of said male locking members within said female locking members being equal to the sum of said first and second predetermined distances, and said first and second predetermined distances being such as to substantially prevent said coops from unlocking during transport thereof by a vehicle;

a plurality of complementary first and second reinforced pad means on said upper and lower wall sections respectively, in vertical alignment with said sidewall sections and spaced about the periphery of said upper and lower wall sections, said plurality of first pad means being disposed in spaced positions about the upper surface of said upper wall section to define a plurality of reinforced resting pads thereon, and said plurality of second pad means being disposed on the lower surface of said lower section in vertical alignment with said plurality of first pad means to define a plurality of reinforced support pads, each of said first reinforced pad means comprising at least one rib member extending in a first direction in relation to the plane of said sidewall section it is in alignment with, and each of said corresponding second pad means comprising at least one rib member extending in a second direction which is traverse to said first direction, said reinforced support pads being adapted to engage and rest on said reinforced resting pads of the coop positioned immediately therebeneath when a plurality of said coops are stacked vertically one on top of the other so that substantially the entire weight of said coops positioned above one of said coops is borne by said sidewall sections of said one coop;

a door for said opening in said at least one of said upper, lower and sidewall sections; and

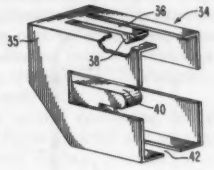
door mounting means for mounting said door in said opening for movement between an open position and a closed position, said door mounting means comprising hinge rod means disposed along a hinge edge of one of said door and said section having said opening therein, and hinge means along a corresponding hinge edge of the other of said door and said section having said opening therein, said hinge means comprising a plurality of U-shaped members having side arms defining a recess for receiving associated portions of said hinge rod means therebetween, and said side arms of at least one of said U-shaped members including protruding portions defining a gap therebetween which is less than the diameter of its associated portion of said hinge rod means so that said associated portion of said hinge rod means is firmly held in place in said recess of said at least one U-shaped member by said protruding portions.

4,342,394

REMOVABLE PROTECTIVE COVER FOR A VIDEO DISC STYLUS CARTRIDGE

Byron K. Taylor, Carmel, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,273
Claims priority, application United Kingdom, Aug. 13, 1980, 8026335
Int. Cl.³ G11B *3/10*; B65D *81/02, 85/30*
U.S. Cl. 206—521 9 Claims



1. A protective cover for a record playback cartridge assembly, said cartridge assembly comprising: a cartridge body; a stylus arm mounted within said body; a pickup stylus mounted on one end of said arm; and an elongated flylead member connected between said cartridge body and a certain point in the vicinity of said stylus, said flylead normally assuming a bow-like shape, said cartridge assembly being inserted into a player for record playback, said protective cover comprising:

a housing adapted to slide over at least a portion of said cartridge body when said cartridge assembly is out of said player; and

means located within said housing and normally not touching said flylead for preventing the inversion of said bow-like shape of said flylead;

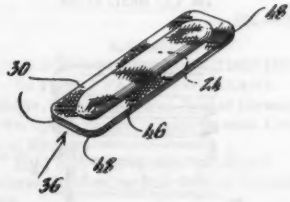
said protective cover being removed when said cartridge assembly is inserted into said player for record playback.

4,342,395

LIQUID DISPENSING UNIT AND METHOD OF MANUFACTURE THEREOF

James B. Brown, R.F.D. #2, Box 313, Mt. Kisco, N.Y. 10549

Filed Feb. 2, 1981, Ser. No. 230,604
Int. Cl.³ B65D *85/42*; B65B *83/00, 11/00*
U.S. Cl. 206—530 9 Claims



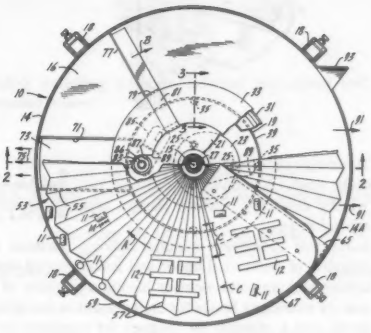
1. A liquid dispensing unit comprising: a cylindrical crushable glass vial having a liquid therein, a plastic blister package having identical complementary recesses forming a chamber for said glass vial and flange sections extending in a plane parallel to the longitudinal axis of said unit, a plurality of spaced holes in each of said recesses, and a non-woven fabric web applied to the top and bottom surfaces of said blister package whereby when said vial is crushed at least a major portion of said liquid passes through said holes in said recesses to penetrate through said non-woven cloth.

4,342,396

ROTARY PARTS SEPARATOR

Norman A. Fagnant, Mendon, Mass., and James L. Young, Pascoag, R.I., assignors to Nelmor Company, Inc., North Uxbridge, Mass.

Filed Aug. 11, 1980, Ser. No. 176,859
Int. Cl.³ B07C *5/00*
U.S. Cl. 209—546 9 Claims



1. A rotary parts separator for separating small parts, having a given maximum dimension, from a mixture of such small parts with larger members that have minimum principal dimensions larger than that maximum dimension, the parts separator comprising:

a cylindrical separator baffle having a vertical axis;

a conical rotor mounted within the upper portion of the separator baffle in coaxial relation thereto, the outer surface of the rotor having a corrugated configuration defining a multiplicity of peaks extending outwardly and downwardly from the rotor apex and separated by a corresponding multiplicity of outwardly and downwardly diverging and deepening valleys,

the peripheral portion of each rotor valley being wider and deeper than the maximum dimension of the small parts but not wide enough or deep enough to receive any of the larger members,

and the outer rim of the rotor being spaced from the separator baffle by an annular separation gap that is wide enough, at least at the rotor valley ends, to allow the small parts to fall therebetween at any point around the rotor periphery, but not wide enough for passage of the larger members;

drive means, including a drive shaft coaxial with the baffle axis, for rotating the rotor in a given direction of rotation;

input guide means for guiding a mixture of the small parts and the larger members onto the rotor at a predetermined input location, both the parts and the larger members moving outwardly and downwardly by combined centrifugal and gravitational forces;

output guide means, below the rotor, for guiding the small parts, falling through the separation gap, into a small parts discharge port located below the bottommost portion of the rotor rim;

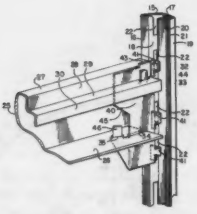
and a large member discharge port, comprising an interruption in the separator baffle, extending a substantial distance below the rim of the rotor, the larger member discharge port being located between the small parts discharge port and the input location.

4,342,397

FASTENINGS FOR STORAGE RACKS

Robert T. Halstrick, 107 Prospect Ave., Langhorne, Pa. 19047

Filed Sep. 8, 1980, Ser. No. 185,224
Int. Cl.[3] A47F *5/00*
U.S. Cl. 211—191 8 Claims



1. A storage rack comprising

upright posts rectangular in cross section and having outwardly extending vertical flanges and having vertically spaced slots,

a horizontal crossbeam member having portions with a plurality of horizontal upper and lower spaced slots, and

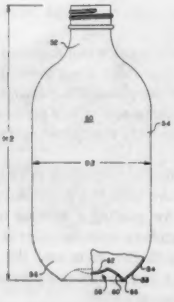
a unitary locking plate member having a plurality of downwardly extending hooks for engagement in the slots in the posts, and a plurality of tongues for engagement in the slots in the crossbeam member, at least one of the tongues being a wedging tongue.

4,342,398

SELF-SUPPORTING PLASTIC CONTAINER FOR LIQUIDS

Long F. Chang, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 16, 1980, Ser. No. 197,467
Int. Cl.[3] B65D *1/02*
U.S. Cl. 215—1 C 9 Claims



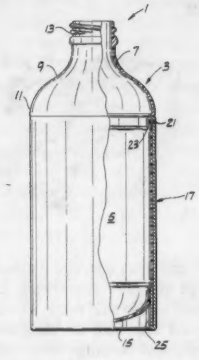
1. In a bottle for the retention of fluids under pressure, having a neck portion, a bottom portion and a side wall interconnecting the neck portion and the bottom portion, the bottom portion comprising: an inner wall defining a central cavity; a generally convex outer wall; a return portion joining lower ends of said inner wall and said outer convex wall to define a seating ring with the extreme lower end of said outer wall adjacent said return portion being concave.

4,342,399

COMPOSITE BOTTLE

Robert F. Stirling, St. Louis County, Mo., assignor to The Seven-Up Company, St. Louis, Mo.

Filed Feb. 17, 1981, Ser. No. 234,721
Int. Cl.[3] B65D *23/08*
U.S. Cl. 215—12 R 13 Claims



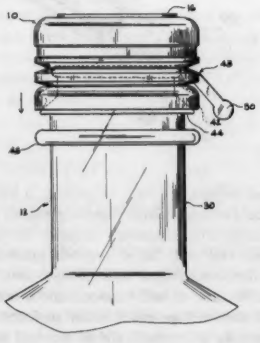
13. A composite bottle for carbonated beverages comprising a bottle of a CO_2-permeable synthetic resin material having a cylindrical body, a rounded bottom, and a neck with a transition convergent from a peripheral shoulder at the upper end of the body to the neck, the latter having a screw-thread finish for a screw cap, a tubular CO_2-impermeable jacket covering substantially the entire body of the bottle below the peripheral shoulder and extending down below the bottom of the bottle for stably supporting the latter, said jacket comprising an outer layer capable of having decorative labeling matter printed thereon, an intermediate layer of fibrous material bonded to the outer layer, and an inner layer of aluminum foil adhered to the intermediate layer and the body of the bottle, said layer of aluminum foil providing a CO_2-impermeable barrier for reducing loss of carbonation by CO_2 permeation through the bottle.

4,342,400

TAMPER INDICATING CLOSURE AND PRESSURIZED CONTAINER

Santos A. A. Llera, Calle Carite, P.R., assignor to Precision Plastic Products Corp., Toa Baja, P.R.

Filed Sep. 10, 1980, Ser. No. 185,888
Int. Cl.[3] B65D *41/48*
U.S. Cl. 215—256 10 Claims



1. A one-piece molded plastic tamper indicating closure in

combination with a pressurized container such as a champagne bottle, said closure comprising:

a crown;

a plug portion downwardly depending from said crown engaging the interior surface of the neck to provide sufficient bearing and sealing forces therebetween so as to prevent undesired or premature ejection of the closure from the container, the plug portion being cylindrical in nature, having a plurality of sealing means located thereon engaging the interior surface of the neck so as to resist withdrawal of the plug portion therefrom;

a skirt comprising a side wall depending from said crown a distance substantially less than the plug portion with said skirt fitting over the exterior of the neck;

a tamper indicating portion including a radially inwardly projecting wedge shaped internal ring and located below said side wall;

a tear-away portion connecting said side wall and said tamper indicating portion and adapted to be removed to separate said side wall from said tamper indicating portion;

the pressurized container having a neck with a retaining means thereon, said retaining means including a flange having an upper surface which slopes downward and terminates in a bottom surface, said container having an annular bead located below said bottom surface with a portion of the tamper indicating portion located between said annular bead and said bottom surface when the closure is fully placed on the container, and said bead being of sufficient size so as to inhibit removal of the tamper indicating portion from the container, the diameter of the bead and the dimensional tolerances of the ring being such that the ring is positioned snugly between the bead and the bottom surface of the retaining means so as to be substantially fixed therebetween on the neck so as to prevent prying of the ring off the neck;

said closure being integrally constructed and capable of sealing the container by being axially forced thereon while being sufficiently resilient to allow the tamper indicating portion to yielding slide over the retaining means when the closure is forced on the container with said tamper indicating portion so positioned so as to be substantially unremovable therefrom; and

whereby when the closure is fully placed on the neck of the container removal of the closure therefrom is prevented due to the engagement of the plug portion, the tamper indicating portion and the retaining means, the closure being only removable by removing the tear-away portion with the tamper indicating portion remaining on the container as an indicator of tampering to the user.

4,342,401

HOUSING FOR AQUARIUM FILTERS HAVING BAYONET FASTENING MEANS

Rudolf Panthöfer, St. Augustin, Fed. Rep. of Germany, assignor to Tetra Werke Dr. rer. nat. Ulrich Baensch GmbH, Melle, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,418

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3013624

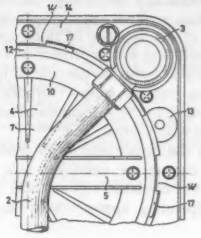
Int. Cl.³ B65D *41/06, 41/36*

U.S. Cl. 220—301 **15 Claims**

1. A pressure-resistant housing for aquarium filters, comprising:

a housing frame having at least one inlet and at least one outlet, said housing frame including inner inclined surfaces; and

a cover detachably connected to said housing frame and being rotatable relative thereto, closure of said cover, accompanied by rotation thereof, being effected by an axial movement thereof effected by means of said inclined surfaces of said housing frame, said axial movement providing a sealing pressure between said cover and said housing frame.



4,342,402

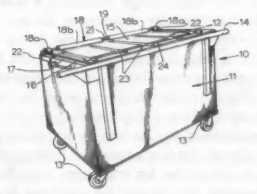
REFUSE CONTAINER COVER

Donald S. Jungles, Lockport, Ill., assignor to Dymar Industries, Inc., Lockport, Ill.

Filed May 14, 1981, Ser. No. 263,414

Int. Cl.³ B65D *43/14, 51/04*

U.S. Cl. 220—343 **12 Claims**



1. In combination with a container having an open top section with hinge rod brackets and a hinge rod at the back edge thereof, a one piece molded plastics material lid for said open section comprising a substantially planar sheet of substantially uniform thickness with a dependent peripheral lip along the front and sides of the sheet, said sheet having U-shaped hinge portions extending along the rear edge thereof with end wall portions having bores adapted to receive the hinge rod carried by the brackets of the container, and a plurality of embossments in said sheet extending transversely and longitudinally providing reinforcing ribs including at least one longitudinal rib spanning the sheet near the front edge thereof and a plurality of transverse ribs spanning the sheet between the longitudinal rib and the U-shaped hinge portions.

4,342,403

BOX AND LID CONSTRUCTION

Deane L. Badtke, and Robert V. Lehman, both of Rockford, Ill., assignors to Keystone Consolidated Industries, Inc., Peoria, Ill.

Continuation of Ser. No. 91,544, Nov. 5, 1979, abandoned, which is a continuation of Ser. No. 923,894, Jul. 12, 1978, abandoned, which is a continuation of Ser. No. 786,476, Apr. 11, 1977, abandoned. This application Mar. 12, 1981, Ser. No. 243,058

Int. Cl.³ B65D *83/04*

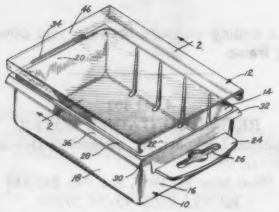
U.S. Cl. 220—345 **1 Claim**

1. A container and lid comprising in combination:

a container in the form of a rectangular box with four sides, a bottom and an open top side, each one of a first pair of opposed sides including a lip member, extending along the entire side, each lip member including a planar top surface, each lip member also including a downwardly and outwardly slanted inclined surface defining a cam surface termi-

nating at an edge and also including a lower lip surface, the edges of each of the lip members being spaced substantially uniformly, the top surface and lower lip surface being spaced substantially uniformly, the other pair of opposed sides including a planar top surface coplanar with the planar top surface of the first pair of sides, one of the other pair of sides also including a stop projection extension from the top surface and side opposite the one of the other pair of sides including an integral support bracket projecting substantially transverse to the side opposite and including a slot for cooperation with a hook; and

a substantially flat, four-sided lid of flexible material having a top which covers the open top side of the container by resting on the coplanar top surfaces and also having two opposed depending opposite side flanges extending along



the entire side, each flange including a side surface section depending substantially transverse to the top and spaced therefrom, the side surface sections being spaced substantially equal to the distance said edges are spaced and said lower gripping portion being spaced from the top of the lid substantially equal to the distance of the lower lip surface from the top surface, and providing means whereby the lid may be positioned on the box by impressing the lid flanges downwardly on the box edges and flexing the lid to snap the lid flanges over the lip members and further providing means whereby the lid may be removed from the box only by sliding the lid away from the stop projection in the top portion toward the support bracket, said stop projection acting to limit sliding movement of the lid in one direction and prevent accidental removal of the lid from the container when hanging on a hook by downward sliding of the lid.

4,342,404

AUTOMATIC CAN END TRANSFER DEVICE

Harry T. Baker, Ancaster, Canada, assignor to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 66,246, Aug. 13, 1979, abandoned. This application Jul. 16, 1980, Ser. No. 169,373

Int. Cl.³ B65G *57/06*

U.S. Cl. 221—10 **9 Claims**

1. Apparatus for transferring a work piece from a first station to a second station comprising:

(a) a main conveyor for said work pieces having an input end operably associated with said first station and an output end;

(b) a stacking means for stacking said work pieces, said stacking means having a loading end and a discharge end, and wherein said loading end is operably associated with said output end of said main conveyor;

(c) high and low indicator means associated with said stacking means for sensing the level of said stacked work pieces;

(d) a collection station for said work pieces, said collection station being intermediate said input end and said output end of said main conveyor;

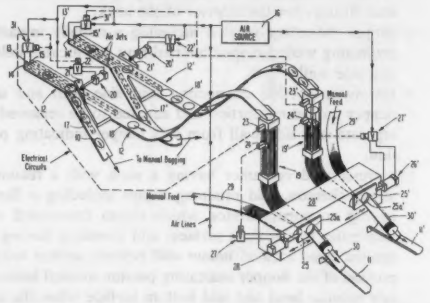
(e) an auxilary conveyor for said work pieces connected to said main conveyor between said input end and said output end thereof, said auxiliary conveyor terminating at said collection station;

(f) a manual feed conveyor, extending from said collection station to an exit proximate said stacking means discharge end, said manual conveyor being disposed to receive and convey work pieces manually fed thereto;

(g) a gate having an opening therein and movable from a first position wherein said opening is aligned with said discharge end of said stacking means to a second position wherein said opening is aligned with said manual conveyor exit;

(h) second station conveying means extending from said gate to said second station;

(i) diverter means associated with said main conveyor and said auxiliary conveyor and responsive to a signal from



said high indicator means to divert the flow of work pieces from said main conveyor to said auxiliary conveyor when said level of work pieces in above said high indicator means and to permit the flow of work pieces to procede along said main conveyor when said level is below said high indicator means; and

(j) moving means operably connected to said gate, to move said gate in response to a signal from said low indicator means from said first position to said second position when said level falls below said low indicator means and from said second position to said first position when said level rises above said indicator means.

4,342,405

RECTANGULAR FIBERBOARD CONTAINER FOR BULK MATERIAL WITH FUNNEL-LIKE DISPENSING BOTTOM

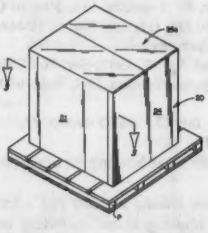
Thomas E. Croley, Worthington, Ohio, assignor to Willamette Industries, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 81,767, Oct. 4, 1979, Pat. No. 4,240,565. This application Sep. 26, 1980, Ser. No. 191,140

The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.

Int. Cl.³ B65D *35/56*

U.S. Cl. 222—105 **12 Claims**



1. A container assembly comprising a tubular body of fiberboard or the like of rectangular cros section with a bottom structure at its lower end and with four side-wall forming

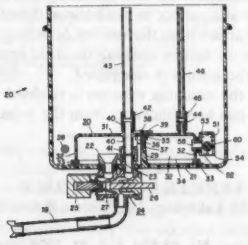
panels extending upwardly at the periphery thereof; said bottom structure including support means secured to said side-wall panels and a plurality of separate segmental insert sections forming a funnel-like dispensing bottom with a central dispensing opening, each of said separate insert sections comprising an upper material-directing wall having a pair of depending wedge-shaped support walls at its sides, each material-directing wall having a wider end outwardly at one of said side-wall panels and extending inwardly to a point spaced from the center of the bottom structure at the dispensing opening, said support walls having lower edges supported by said bottom support means of the bottom to support said material-directing wall so that it inclines downwardly towards said dispensing opening, said material-directing wall being of substantially triangular form with a wide end outwardly at the adjacent side-wall panel and a narrow end inwardly at the dispensing opening so that the insert is substantially wedge-shaped both vertically and horizontally; a plurality of said segmental insert sections being wedged side-by-side in cooperation with each of said side-wall panels and resting on said bottom support means so as to direct the material contained in the container body inwardly and downwardly from said side-wall panel to said dispensing opening.

4,342,406

DISPENSER FLOW PROPORTIONING DEVICE

Gerry A. Lee, Olin, Iowa, assignor to Beatrice Foods Co., Chicago, Ill.

Filed Sep. 16, 1980, Ser. No. 187,751
Int. Cl.³ G01F *11/28*
U.S. Cl. 222—442 **10 Claims**



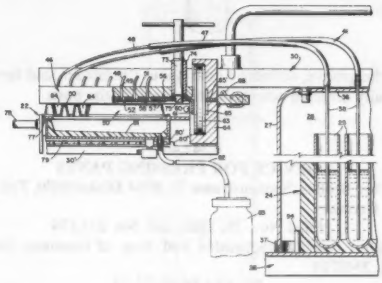
1. In liquid dispensing apparatus including a first container for liquid and a second container for liquid disposable below a liquid level in the first container, the second container having an inlet for liquid from the first container and an outlet for liquid, valve means to open and close said outlet, and means for venting the second container above said liquid level, the improvement comprising: flow control means for the second container inlet for controlling the flow of liquid from the first container into the second container so that the quantity of said flow when said valve means is open during a selected time period is substantially independent of said liquid level in the first container, the flow control means including a flow control housing disposable below said liquid level, the housing having a chamber for liquid therein and upper and lower ends with respect to said liquid level, the lower chamber end communicating with the first container for flow of liquid therefrom into the chamber, the chamber having an outlet for liquid therefrom intermediate said chamber ends in communication with the second chamber inlet for flow of liquid from the chamber into the second container; and a liquid flow check member retainable and movable in the chamber between said ends towards and away from said chamber outlet, the check member having a weight less than that of an equal volume of liquid for the first container, the check member, the chamber and the chamber outlet being proportioned relative to each other so that when said valve means is opened the check member moves relative to the chamber outlet effective to provide decreasing impedance to liquid flow from the chamber through the chamber outlet during said time period.

4,342,407

LIQUID DISPENSING APPARATUS

Paul S. Citrin, Danbury, Conn., assignor to Dynatech Laboratories, Incorporated, Alexandria, Va.

Continuation of Ser. No. 821,836, Aug. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 595,005, Jul. 11, 1975, Pat. No. 4,058,146. This application Jul. 30, 1980, Ser. No. 173,628
Int. Cl.³ B65B *3/06*; F16C *55/14*
U.S. Cl. 222—485 **8 Claims**



1. Apparatus for the rapid accurately metered dispensing of separate small amounts of liquid comprising a pinch valve having two relatively movable members, a plurality of individual liquid conducting conduits having resilient discharge terminals extending in closely spaced relation between said members, and actuating means for relatively moving said members between a valve closed position wherein all of said terminals are pinched shut between said members and a separated valve open position wherein said terminals are all free to spring to open condition, one of said pinch valve members being a reciprocable member and said actuating means comprising a piston connected to said reciprocable member and slidable in a cylinder, the interior of the cylinder being separated by said piston into two chambers, resilient means in one of said chambers biasing said piston in the direction to displace said reciprocable member to said valve open position, means for introducing air under pressure into the other chamber through a check valve, said air pressure exerting a force on said piston greater than said resilient means whereby said piston may be moved in the direction to displace said reciprocable member to pinch said terminals shut, and means for periodically introducing fluid pressure into said one chamber whereby the combined forces of fluid pressure and resilient means in said one chamber may periodically move said piston to displace said reciprocable member sufficiently to release all of said terminals for discharge of liquid during each period.

4,342,408

POSITIVE SEAL SPOUT

David E. Boring, New Oxford, and Larry T. Quibell, Spring Grove, both of Pa., assignors to Sonoco Products Company, Hartsville, S.C.

Filed Jul. 16, 1980, Ser. No. 169,410
Int. Cl.³ B65D *5/72*
U.S. Cl. 222—566 **6 Claims**

1. For use in a caulking cartridge or the like, a self-sealing spout, said spout comprising an elongated material discharge tube having opposed inner and outer ends, said spout further including a generally planar enlarged sealing base integrally formed with the inner end of the tube peripherally thereabout, said base including a free peripheral edge, and inner and outer faces, a groove defined in the outer face of the base completely

thereabout and in inwardly spaced relation to the free peripheral edge of the base, said base, between the peripheral edge

and the groove, defining a continuous flexible lip, said lip being laterally directed relative to the plane of the base.

4,342,409

DEVICE FOR PRESSING PANTS

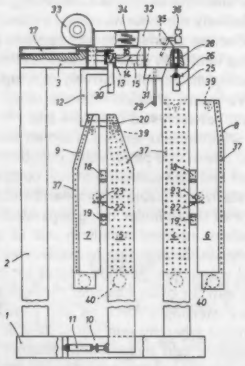
Günther Bröllos, Sonnenstrasse 72, 8804 Dinkelsbühl, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,174

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948714

Int. Cl.³ D06F *71/28*

U.S. Cl. 223—73 **10 Claims**



1. In a device for pressing pants, in which: a frame is provided, having attached thereto means comprising a clamp and a freely extending tensioning finger which are provided on an upper crossarm for holding and stretching the pants waistband; underneath there are provided two pairs of vertically running press plates each having a front plate and a back plate which in the closed state face each other in pairs, with their broad sides being furnished with nozzle openings, by which said press plates accommodate intermediate insertion plates in the pairs; and in which there are provided pressing unit assemblies for pressing the press plates against each other in pairs, and a mechanism for tensioning the pants by translating plates in the horizontal direction with respect to each other; the improvement comprising providing that the two front press plates and the two insertion plates are hinged to swing outward in flap fashion with respect to each of the back press plates; that said pressing assemblies are disposed outside the swing region of the front press plates and the insertion plates; that for tensioning the pants one back press plate is made horizontally translatable with respect to the other back press plate; and that a clamp is associated with the broad side of the wider press plate.

4,342,410

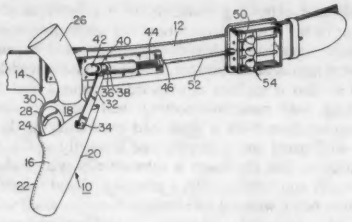
COMBINATION HAND GUN HOLSTER AND BELT

Neil B. Sloan, 1514 Ely Rd., Hixson, Tenn. 37343

Filed Mar. 6, 1981, Ser. No. 241,446

Int. Cl.³ F41C *33/02*

U.S. Cl. 224—243 **6 Claims**



1. A combination handgun holster and belt comprising:

a handgun holster having inner and outer side panels which assist in forming a tapering configuration for conformably receiving a handgun, the holster having an open end for insertion and withdrawal therethrough of a handgun;

a belt attached to the inner side panel for suspending the holster on one side of the waist of a person;

a retaining member having first and second ends, said retaining member being attached at the first end to the outer side panel of the open end of the holster;

a means for detachably mounting the seconnd end of the retaining member to the belt, whereby when the retaining member is mounted to the belt the handgun is safely retained in the holster and cannot be withdrawn therefrom; and

a release means attached to the belt for detaching the retaining member from the belt by utilizing the hand opposite the side from which the holster is suspended,

whereby when the retaining member is released from the belt the handgun can be withdrawn from the holster.

4,342,411

VEHICLE LUGGAGE RACK

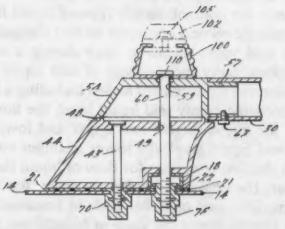
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Continuation of Ser. No. 13,524, Feb. 21, 1979, abandoned. This application Nov. 6, 1980, Ser. No. 204,478

The portion of the term of this patent subsequent to Jun. 23, 1998, has been disclaimed.

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—319 **15 Claims**



1. In a luggage carrier for supporting luggage and the like on an automotive vehicle,

a stanchion assembly comprising an upper stanchion part having means for supporting one end of a luggage constraining rail, and a lower stanchion part disposed at least in part below said upper stanchion part, said upper stanchion part having an upper surface capable of being opera-

bly associated with additional means for constraining articles;

first generally vertically oriented fastening means for operatively securing said upper and lower stanchion parts together and operably disposed to be capable of securing additional means for constraining articles to said stanchion assembly; and

second generally vertically oriented fastening means for securing said lower stanchion part to said vehicle concealed by said upper stanchion part when said upper and lower stanchion parts are operatively assembled, wherein said lower stanchion part is still secured to said vehicle when said first fastening means is unfastened.

4,342,412

TILT-BOX FOR GUIDING A CONTINUOUSLY MOVING WEB

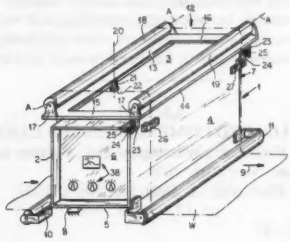
Otto Lorenz, Schwibbogenplatz 2b, 8900 Augsburg, and Merten Keller, Alter Fischbacher Weg 1, 6239 Eppstein, both of Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,891

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3008775

Int. Cl.³ B65H *25/26*

U.S. Cl. 226—21 **15 Claims**



1. A guide apparatus for a continuously moving web, said apparatus comprising:

an upstream fixed roller and a downstream fixed roller substantially parallel thereto and defining a plane therewith:

a fixed and substantially closed box between said upstream and downstream rollers;

a frame offset from said plane and pivotal on said box about a frame axis substantially perpendicular to said plane;

a pair of adjustment rollers rotatably pivoted on said frame about parallel adjustment-roller axes fixed relative to each other and to said frame and offset from said plane, whereby a continuously moving web can pass along a path over said upstream roller, over one of said adjustment rollers, over the other adjustment roller, and over said downstream roller;

a sensor mounted along said web downstream of said other adjustment roller;

a motor inside said box connected to said frame and energizable to pivot said frame on said box about said frame axis; and

control means in said box connected between said sensor and motor for pivoting said frame on said box when the web position detected by said sensor deviates for a predetermined desired position.

4,342,413

TURNING BAR FOR MOVING WEB

Imants Reba, Vancouver, Mass., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Feb. 5, 1981, Ser. No. 231,656

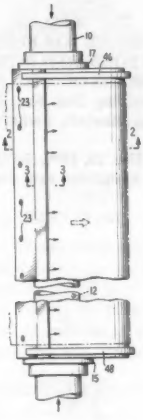
Int. Cl.³ B65H *17/28, 17/32*

U.S. Cl. 226—97 **12 Claims**

1. Apparatus for supporting web material as said web material is transported and redirected from a predetermined first direction of movement to a predetermined second direction of movement, said apparatus comprising:

elongated first plenum defining means having an inlet for the admission of pressurized gas into said first plenum and an outlet positioned along the length of said elongated first plenum defining means for allowing egress of said pressurized gas from said first plenum;

an elongated housing surrounding and spaced from said elongated first plenum defining means to define a second plenum therewith in fluid-flow communication with said first plenum through said outlet, said elongated housing at least partially defining a slit providing fluid-flow communication between said second plenum and the ambient atmosphere; and



means defining a generally curved fluid flow attachment surface positioned immediately adjacent said slit whereby pressurized gas exiting from said slit will attach itself to said generally curved fluid flow attachment surface due to the Coanda effect and provide along with ambient air entrained by said exiting gas a gaseous support cushion for said web during transport and redirection thereof.

4,342,414

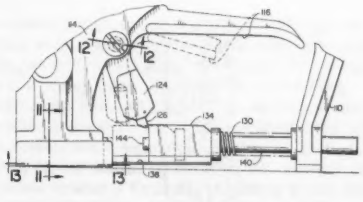
GLAZIER'S POINT DRIVER

Eugene W. Grzeika, and Vincent T. Kozyrski, both of Bristol, Conn., assignors to The Fletcher-Terry Company, Farmington, Conn.

Filed Jul. 13, 1978, Ser. No. 924,447

Int. Cl.² B25C *5/00*

U.S. Cl. 227—109 **7 Claims**



1. In a glazier's point driver having a frame defining a magazine for a stack of points and a main spring biased driving block including a plate for engaging the endmost point in the stack, and a trigger mechanism for cocking the block and releasing it for movement along a path fixed in the frame to drive the point, the improvement to said trigger mechanism comprising

an operating lever, spring return means for said lever, pivot means defining an axis for movement of said operating lever and including an angularly adjustable eccentric cam for varying the location in said frame of the lever pivot axis with respect to the path of the block, and catch means for releasably latching said operating lever and driving block during cocking movement, said catch means including at least one spring biased element between said lever and said block to permit independent driving movement of the block and return movement of the operating lever preparatory to a succeeding cocking and driving motion.

4,342,415

PROTECTIVE DEVICE FOR ELECTRIC COMPONENT WHICH CAN BE SOLDERED INTO A PRINTED BOARD BY MEANS OF A SOLDER BATH

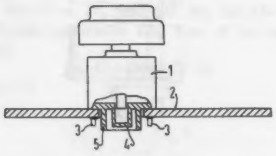
Walter Wachs, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 20, 1979, Ser. No. 105,948

Claims priority, application Fed. Rep. of Germany, May 15, 1979, 7914017

Int. Cl.³ B23K *1/08*

U.S. Cl. 228—39 **7 Claims**



1. A component protective system, comprising: an electronic component designed for soldering into a printed circuit board by means of a solder bath; a portion of the component projecting through the printed board when the component is mounted; and means for protecting said portion from the influence of the solder bath, said means including a protective collar arranged on the component around the portion to be protected, and said protective collar being open in a direction toward the solder bath and projecting beyond the portion to be protected.

4,342,416

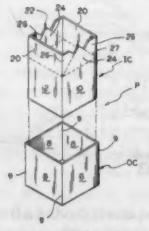
TWO-PIECE RECLOSABLE CONTAINER

Nicholas A. Philips, Glendale Heights, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 15, 1981, Ser. No. 225,308

Int. Cl.³ B65D *5/32*

U.S. Cl. 229—23 BT **1 Claim**



1. In a two-piece reclosable container, the combination of:

(a) an outer body having a closed bottom and including: opposed pairs of side walls foldably joined to each other to form a tubular structure open at both the upper and lower ends thereof;

(b) an inner body telescoped within said outer body, and including opposed pairs of side walls foldably joined to each other to form a tubular structure open at both the upper and lower ends thereof;

(c) reclosable closure arrangement means for closing and reclosing the upper end of said inner body comprising:

(i) a pair of opposed, generally rectangular, first closure flaps foldably joined to the upper ends of one opposed pair of side walls;

(ii) a pair of second closure flaps joined to the upper ends of the other pair of side walls; and each including:

(A) a generally triangular center section foldably joined at its lower edge to a related side wall and having upwardly converging side edges;

(B) a pair of side sections disposed between said center section and said first closure flaps;

(C) said side sections having outer edges foldably joined to adjacent side edges of said first closure flaps and having inner edges detachably joined to adjacent said edges of said center section;

(D) said second flap side sections being interposed between and parallel to said center sections and said first flaps in a bellows-type arrangement when said inner container is initially closed, said side sections being separable from said center sections and being insertable between corresponding side walls of said inner and outer containers when said inner container is reclosed after it has been opened initially.

4,342,417

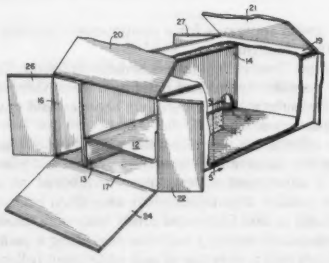
END LOADED COMPARTMENTED CARTON

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 18, 1980, Ser. No. 178,937

Int. Cl.³ B65D *5/48*

U.S. Cl. 229—27 **2 Claims**



1. An end loaded compartmented carton formed from a single blank of paperboard or the like comprising:

(a) four elongated exterior side walls foldably attached to one another along their elongated side edges which are shiftable between a substantially flat collapsed condition to an erected condition wherein the exterior side walls define an elongated rectangular carton with right angle corners;

(b) end closure flaps foldably attached to the end edges of said side walls;

(c) an internal product supporting and locating structure within the carton consisting of a substantially full length interior wall panel said wall panel having a length substantially equal to the length of said side walls connected between two opposed side walls of the carton to form two separate compartments that extend the full length of said carton;

(d) a first glue flap foldably attached along a first portion of said interior wall panel and adhered to the inside of one of

said carton side walls to secure the carton side walls together;

(e) a second glue flap foldably attached along a second portion of said interior wall panel and adhered to the side wall of said carton opposite said first glue flap to retain said interior wall panel in position and to form a first compartment that is unobstructed for easy loading;

(f) an auxiliary glue tab cut from said first glue panel and adhered to the side wall of said carton next to said second glue flap; and,

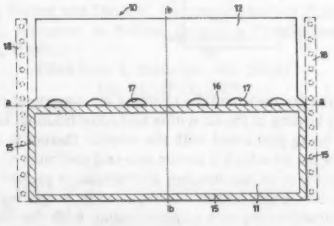
(g) an integral bridge member for one of said compartments, said bridge member being foldably attached to a first portion of said interior wall panel and arranged to extend between said interior wall panel and an adjacent side wall of the carton, said bridge member including a first glue panel that is adhered to said interior wall panel, a bridge panel connected to said first glue panel and a third glue flap adhered to an adjacent carton side wall to position said bridge panel between said interior wall panel and said adjacent carton side wall.

4,342,418

BLANK FOR THE TRANSMISSION OF INFORMATION HAVING IMPROVED PREGLUED SEALING AREAS

Luciano Meschi, Corso Amedeo 73, 57100 Livorno, Italy

Filed Aug. 14, 1980, Ser. No. 177,987
Int. Cl.³ B65D *27/00, 27/12*
U.S. Cl. 229—92.1 **7 Claims**



1. In a transmission blank for information and data, adapted to remain stable in a folded condition, comprising a sheet having a first folding line for dividing it into a first part and a second part, said first part having protruding edges from the three sides thereof forming a first strip coated on one face thereof along said protruding edges with reversible or irreversible glue, the improvement comprising:

a second strip on the same face of said first part as said first strip, said second strip being adjacent to the said first folding line and being coated with glue; and

a third strip on said second part being adjacent to said first folding line, said third strip being provided with spaced guards or cut-outs symmetrically positioned with respect to a second folding line on said sheet orthogonal to said first folding line, the area of said third strip between said guards or cut-outs ensuring a sufficiently strong sealing between said second strip and said third strip when said first and second parts are folded together over said first folding line.

4,342,419

SAFETY COVER FOR CENTRIFUGE BUCKET

George E. Conway, Newark, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Oct. 31, 1980, Ser. No. 202,891
Int. Cl.³ B04B *7/06, 15/08*
U.S. Cl. 233—1 A **8 Claims**

1. A safety cover for sealing the mouth of a pivotally mounted bucket of a centrifuge rotor comprising:

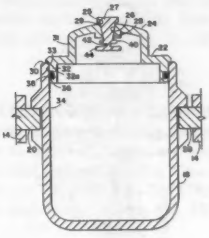
a cover member having a;

raised dome-like housing;

an outer flange communicating with the base of said housing;

a tubular extension of slightly smaller size communicating with the lower side of said flange;

said tubular extension configured to make telescoping engagement with the sidewall of said bucket, and the depth of said engagement limited by the point at which said flange contacts the top surface of said bucket;



a groove encircling said tubular extension;

a resilient O-ring disposed in said groove for effecting a seal between the cover and the bucket; and

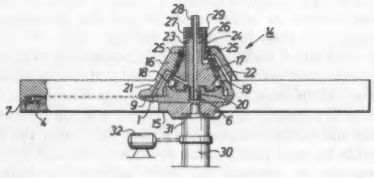
means in the cover for venting air from the bucket during telescoping movement of said cover with respect to the bucket, said means automatically sealing during centrifugation.

4,342,420

DEVICE FOR SEPARATING LIQUIDS, ESPECIALLY WHOLE BLOOD

Friedrich Rosemeier, and Helmut Kerber, both of Hechingen, Fed. Rep. of Germany, assignors to Gambro Dialysatoren KG, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,254
Claims priority, application Sweden, Sep. 28, 1979, 7908036
Int. Cl.³ B04B *3/00*
U.S. Cl. 233—28 **30 Claims**

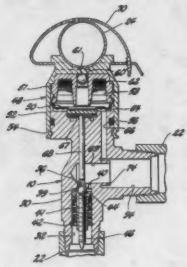


1. A rotatable rigid disc for separating a liquid into fractions according to the densities of such fractions, said rigid disc including an inlet for the liquid to be separated; at least two outlets comprising perforating holes in said rigid disc for the separated liquid fractions; channels on one side of said rigid disc, with each channel being in fluid communication with one of said outlets; and a separation chamber in the form of an elongated, curved conduit on the other side of said rigid disc; wherein said conduit is fluidically connected to said inlet and said outlets, said outlets are positioned on said disc radially outwardly with respect to said inlet, and said outlets are positioned along said elongated, curved conduit so as to provide a separate collection location for each said outlet and so that the most dense fraction is separated by the outlet nearest along said conduit to said inlet and the least dense fraction is separated by the outlet most distal along said conduit from said inlet.

4,342,421
THERMOSTATIC EXPANSION VALVE FOR A REFRIGERATION SYSTEM

Richard E. Widdowson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1981, Ser. No. 237,249
Int. Cl.³ F25C *41/04*
U.S. Cl. 236—92 B **2 Claims**



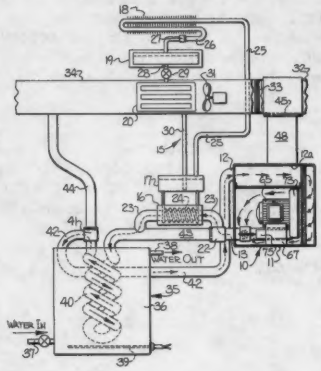
1. A thermostatic expansion valve for a refrigerant system having a condenser-evaporator line connecting a condenser at its outlet to an evaporator at its inlet and a suction line connecting the evaporator at its outlet to a compressor at its inlet, said valve having an inlet and outlet adapted for connection in the condenser-evaporator line and comprising a valve port having an upstream side open to said valve inlet for receiving refrigerant from the condenser and a downstream side open to said valve outlet for delivering the refrigerant to the evaporator, a valve element movable between open and closed positions to open and close said valve port, said valve element arranged on said upstream side so as to be urged towards its closed position by refrigerant pressure at said valve inlet, spring means for biasing said valve element to its closed position, temperature responsive valve biasing means for biasing said valve element toward its open position with a biasing force that increases in response to increasing temperature, pressure responsive valve biasing means for reducing said biasing force of said temperature responsive valve biasing means in response to increasing pressure, pressure signal passage means including a trepanned venturi connected with said downstream side for connecting said downstream side to said pressure responsive valve biasing means so as to transmit thereto a pressure that is proportional to the pressure on said downstream side but decreases upon a substantial increase in fluid flow through said valve port, and heat conduction means for directly connecting said temperature responsive pressure means in heat conducting direct body contact relationship with the suction line whereby said valve element is normally urged to its closed position by said spring means and refrigerant pressure at said valve inlet and is urged towards its open position and provides regulated flow to the evaporator to maintain the latter substantially fully active under all load conditions by said temperature responsive valve biasing means providing an opening valve force that increases with increasing temperature of refrigerant from the evaporator and decreases by operation of said pressure responsive valve biasing means with increasing pressure of the refrigerant delivered to the evaporator except when there occurs a substantial reduction in flow thereto by signaling of said pressure signal passage means.

4,342,422
HEATING AND COOLING SYSTEM USING FRICTIONAL AIR HEATING

Maxie C. Davis, Rte. 8, Box 61, Mooresville, N.C. 28115

Filed Oct. 16, 1980, Ser. No. 197,491
Int. Cl.³ F24H *1/22*
U.S. Cl. 237—19 **10 Claims**

1. An apparatus for heating air comprising an enclosure having an air inlet and an air outlet; and frictional heating means mounted within said enclosure and operable for drawing a flow of air into the enclosure through said inlet, frictionally heating the air, and discharging the heated air through said outlet; said frictional heating means comprising an electric motor having a rotatable shaft, said motor being positioned in the path of flow of the air which is drawn into said enclosure so that the motor is cooled by the flow of air while the heat from the motor serves for preheating the air; a fan rotor carried by said motor shaft and including a series of radially extending vanes for creating a flow of air upon rotation of the rotor by said motor shaft; a rotor housing closely surrounding said fan rotor and cooperating therewith so that the rotational movement of the fan rotor and the resulting air movement produces frictional heating of the air within said rotor housing, said rotor housing being positioned with the exterior thereof in the path of flow of the air which is drawn into said enclosure so that the heated exterior of the housing also serves to preheat the air which is drawn into said enclosure; an air inlet opening formed in said rotor housing and communicating with the interior of said enclosure for admitting air from the interior of the said enclosure into said rotor housing; an air outlet opening formed in said rotor housing for discharging heated air from the rotor housing; and a conduit communicatively connected to said air outlet opening of said rotor housing and extending therefrom to said outlet of said enclosure for thereby discharging a flow of heated air from the enclosure.



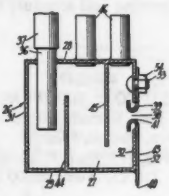
4,342,423
CURTAIN COATING METHOD

John D. Coleman, Surrey Hills, Australia, assignor to Commonwealth Scientific and Industrial Research Organ., Campbell, Australia

Division of Ser. No. 709,068, Jul. 27, 1976, Pat. No. 4,093,016, which is a division of Ser. No. 477,380, Jun. 7, 1974, Pat. No. 3,992,252. This application May 9, 1978, Ser. No. 904,356
Claims priority, application Australia, Jun. 7, 1973, 3579/73
Int. Cl.³ B05B *1/36*
U.S. Cl. 239—1 **2 Claims**

1. A method of forming a continuous film coating of a viscous liquid on a flat surface, comprising the steps of introducing a forced flow of liquid of viscosity in the range 18 seconds to 45 seconds Steinhall Cup at 20° C. into a chamber having an upright side wall with a horizontal slot outlet of vertical width in the range of 1/16″ to ¼″ and maintaining the forced flow of liquid into the chamber whereby in the vicinity of the slot outlet liquid is maintained within the chamber at a level above the upper edge of the slot outlet such that liquid is extruded horizontally from the slot outlet in a horizontal stream which contacts both the upper and lower edges of the slot outlet and has a thickness equal to the width of the slot outlet, allowing

the liquid stream issuing from the slot outlet to fall downwardly under gravity across an upright flat surface extending downwardly from the bottom edge of said slot outlet to terminate at a bottom blade edge at a distance below said horizontal slot outlet such that the falling liquid forms a continuous curtain which is attenuated as it flows down said upright surface



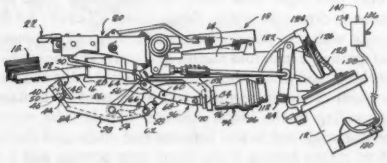
to a thickness less than that of the horizontal stream extruded from said slot outlet, allowing the attenuated continuous curtain to fall away from said upright surface at the blade edge, and moving the surface to be coated horizontally beneath said blade edge such that the continuous free falling liquid curtain below the blade edge falls onto that surface to form a continuous liquid film coating thereon.

4,342,424

COMBINED ROTARY IMPULSE SPRINKLER HEAD AND SHUT-OFF VALVE

Larry P. Meyer, and David C. Dauterman, both of Walla Walla, Wash., assignors to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed Nov. 3, 1980, Ser. No. 203,627
Int. Cl.³ B05B 3/08
U.S. Cl. 239—233 **9 Claims**



1. A sprinkler head comprising:

a sprinkler body having an inlet and an outlet,

means adapted to be communicated with a source of water under pressure for communicating the same with said inlet and for mounting said sprinkler body for movement about a generally vertically extending axis so that water under pressure communicated with said inlet will flow through said sprinkler body and outwardly from the outlet thereof in a stream flowing in a generally upward and outward direction,

means operable in response to the aforesaid flow of water under pressure for effecting progressive movements of said sprinkler body about said axis,

means defining an outwardly facing annular valve seat on said sprinkler body disposed in surrounding relation to said outlet,

poppet valve means cooperable with said annular valve seat,

means mounting said poppet valve means on said sprinkler body for movement exteriorly of said sprinkler body (1) from an open position disposed out of the path of said stream progressively through said stream and generally inwardly onto said outwardly facing annular valve seat into a closed position with respect to said outlet so as to contain water under pressure within said sprinkler body and prevent flow thereof outwardly of said outlet beyond said annular valve seat and (2) from said closed position generally outwardly from said outwardly facing valve seat and progressively out of said stream into said open position,

means for effecting movement of said poppet valve means from said open position into said closed position while said sprinkler body is communicated with the source of water under pressure and the water under pressure is flowing through said sprinkler body outwardly of said outlet and from said closed position into said open position,

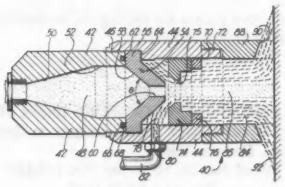
surface means on said poppet valve means operable during the progressive movement of said poppet valve means through said stream for engaging said stream and maintaining reaction forces created thereby generally free from resultant force components acting tangentially to said axis.

4,342,425

CAVITATION NOZZLE ASSEMBLY

Geoffrey W. Vickers, Vancouver, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Aug. 15, 1980, Ser. No. 178,603
Claims priority, application Canada, Apr. 10, 1980, 350120
Int. Cl.³ B05B 7/06
U.S. Cl. 239—424 **17 Claims**



1. A cavitation nozzle assembly adapted to be connected to a source supplying liquid under superatmospheric pressure and for discharging a high velocity jet of said liquid with cavitation bubbles therein, said nozzle comprising inter alia;

a supply chamber connectible to said source for receiving said liquid therefrom, said chamber including an upstream portion divergent in a downstream direction, a downstream portion convergent in the downstream direction, and a central section of generally constant cross-sectional area interconnecting the divergent and convergent portions, said convergent portion being conical in form and converging to an apex so as to define an enclosed angle of about 65° to 90°; and

a discharge orifice at the apex of the convergent portion, and being circular in cross-section with a diameter in the range from about 1.2 mm to about 4.0 mm, said supply liquid undergoing expansion upon passage through said orifice such that cavitation bubbles form in the high velocity jet discharged therefrom.

4,342,426

NOZZLE

John P. Gagliardo, Shrewsbury, Mass., assignor to Feecon Corporation, Westboro, Mass.

Filed Sep. 24, 1980, Ser. No. 190,424
Int. Cl.³ B05B 1/32
U.S. Cl. 239—457 **7 Claims**

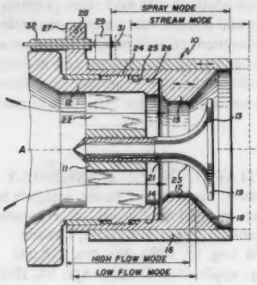
1. Nozzle for non-asipirated fire-fighting medium, comprising:

(a) a fixed assembly including a tubular housing and a button, the assembly having an outer cylindrical surface provided with threads, the housing and the button being concentric with the central longitudinal axis of the outer cylindrical surface,

(b) a first sleeve having an inner cylindrical surface provided with threads that operatively engage the threads on said outer cylindrical surface to enable the first sleeve to be

moved along said axis by rotation of the first sleeve about said axis to control a control gap between the first sleeve and the button,

(c) a second sleeve concentric with the cylindrical surface and slidably mounted on the first sleeve for movement along said axis relative to the button to control spray,



(d) first drive means for rotating the first sleeve about said axis, and

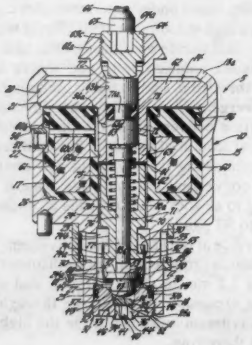
(e) second drive means for sliding the second sleeve on the first sleeve along said axis.

4,342,427

ELECTROMAGNETIC FUEL INJECTOR

Leo A. Gray, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 21, 1980, Ser. No. 170,618
Int. Cl.[3] B05B *1/30*
U.S. Cl. 239—585 **3 Claims**



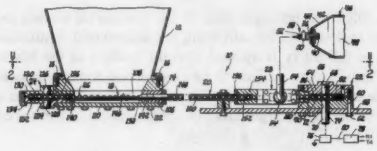
1. An electromagnetic fuel injector including a housing means providing a fuel chamber therein intermediate its ends adapted to receive fuel and a passage from said chamber through which fuel is injected to an engine; said passage defining an annular valve seat where said passage communicates with said chamber; a solenoid pole piece fixed in said housing means axially spaced from said valve seat; an electromagnetic actuated valve means positioned in said housing means, said electromagnetic actuated valve means including a movable valve having a flat on one end thereof and a semi-spherical surface on the opposite end for valve-closing engagement with said valve seat, a cylindrical armature having a reduced diameter cylindrical portion at one end thereof terminating at a flat surface at the free end thereof abutting against said flat of said valve and, a retainer means operatively associated with said reduced diameter portion of said armature and with said valve for loosely securing said valve to said armature for axial movement therewith while permitting lateral movement of said flat of said valve relative to said flat surface of said armature whereby said valve is free to center itself relative to said valve seat upon engagement therewith; said armature being axially movable between a first position at which said valve is in valve closing engagement with said valve seat and a second position at which said valve is in open position relative to said valve seat; and, a valve closing spring positioned to act on said armature in a direction moving said armature to said second position.

4,342,428

POWDERED COAL DELIVERY SYSTEM

Thomas P. Kosek, East Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 5, 1980, Ser. No. 184,537
Int. Cl.[3] F02G *45/00*
U.S. Cl. 239—651 **2 Claims**



1. A gas turbine engine fuel supply system to direct coal powder to a fuel nozzle in a gas turbine engine combustor comprising: reservoir means maintained at atmospheric pressure and including an outlet, a fill cavity, means for continuously filling said cavity with coal powder from said reservoir means, discharge manifold means, coal transport tube means with an inside diameter for defining a continuous loop, coal dust tight, flow path between said fill cavity and said discharge manifold means, conveyor means having interconnected pistons with voids therebetween continuously formed through said coal dust tight flow path, variable speed drive means operative to drive said pistons through said fill cavity for filling said voids with coal powder from said cavity and to meter coal to said discharge manifold means, said conveyor means having a cable loop, said pistons being strung on said cable and including a small diameter segment and a segment of a diameter corresponding to the inside diameter of said tube means to define said voids and to seal between said voids, said discharge manifold means having a conveyor inlet passage and a conveyor outlet passage, means for sealing said conveyor inlet passage and said conveyor outlet passage, a discharge chamber within said discharge manifold means, said chamber having an inlet and an outlet, means for defining a plurality of air jets in said discharge chamber inlet for blasting high pressure air across said conveyor means to discharge coal powder from said voids to produce a fluidized coal powder mixture and to maintain an inlet pressure at said discharge chamber for directing said fluidized coal powder through the outlet from said chamber to a fuel nozzle in a gas turbine engine combustor.

4,342,429

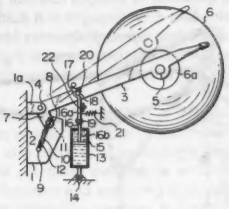
BOBBIN HOLDER

Takashi Katoh, Toyota, and Toshio Yoshizawa, Chiryu, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Feb. 6, 1980, Ser. No. 118,918
Claims priority, application Japan, Feb. 16, 1979, 54-19242
Int. Cl.[3] B65H *54/42, 54/52*
U.S. Cl. 242—18 DD **5 Claims**

1. In a bobbin holder for a winding unit of a textile machine, wherein a pair of cradle arms are turnably supported by mounting means on the frame of the winding unit, said cradle arms rotatably supporting a bobbin on which a yarn package is formed, the improvement which comprises: a releasable damping device comprising an oil cylinder, turnably mounted on a

stationary part of the machine, having a piston and a piston rod having an open hooked shaped engaging portion, a cradle arm provided with an engaging pin for releasably engaging with the hooked shaped portion of the piston rod, and wherein the hooked shaped portion of the piston rod is provided with a cam surface downwardly inclined toward the opening of the hooked shaped engaging portion against which the pin on the



cradle arm rides when the hook shaped portion is disengaged from the engaging pin, a spring which urges the cam surface of the piston rod toward the engaging pin of the cradle arm and a stopper means for restricting the turning of the oil cylinder at a predetermined position corresponding to the position where said hooked shaped engaging portion engages the engaging pin.

4,342,430

METHOD OF SHIFTING STRANDS BEFORE TERMINATION OF WINDING OF GLASS FIBER

Sin Kasai; Yutaka Kawaguchi, and Michio Satoh, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed May 22, 1980, Ser. No. 152,366

Claims priority, application Japan, May 28, 1979, 54/65760; Aug. 17, 1979, 54/104105

Int. Cl.³ B65H *54/02, 67/04*

U.S. Cl. 242—18 A **2 Claims**

1. In a method of drawing a multiplicity of glass filaments from a glass melting furnace, dividing them into a plurality of strands and winding on a single spindle having a waste take-up portion adjacent to a free end thereof to form a plurality of square-ended packages thereon, a method of shifting strands from said packages to said waste take-up portion while continuing rotation of the spindle, characterized by the step of moving a guide from a position adjacent to a supported end of the spindle toward said free end along a path substantially parallel to and adjacent to said spindle so that the guide successively engages, collects and shifts the strands which are running toward the spindle, and the step of setting the spacing between said path and spindle to be sufficiently little and setting the speed of travel of said guide to be sufficiently high to enable the strand to be shifted from a peripheral surface of a package to a peripheral surface of an adjacent package without dropping into a groove formed between the adjacent packages.

4,342,431

DISPENSING UNIT FOR SHEET AND/OR RIBBON PRODUCTS PACKAGED IN REELS

Christian Watellier, 54, route de Lens, 62660 Beuvry, France

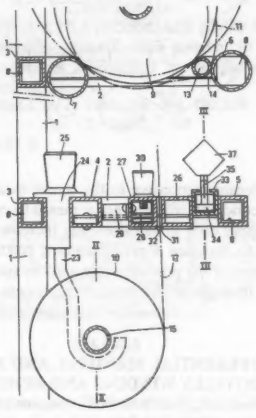
PCT No. PCT/FR79/00083, § 371 Date May 28, 1980, § 102(e) Date May 21, 1980, PCT Pub. No. WO80/00692, PCT Pub. Date Apr. 17, 1980

PCT Filed Sep. 28, 1979, Ser. No. 196,762

Claims priority, application France, Sep. 28, 1978, 78 28324

Int. Cl.³ B65H *19/04, 35/00*

U.S. Cl. 242—55.3 **5 Claims**



1. Reeling display unit for sheet and ribbon products packaged on reels, from which certain lengths of said products must frequently be taken by cutting, at a set point, using a cursor device or a pair of scissors, comprising a frame have a minimum of one level, means on said frame for supporting at least one reel and, slightly upstream from the cutting point, two transverse jaws on said frame situated essentially in the same horizontal plane holding the product between them, the product having previously been inserted from bottom to top between said jaws, further comprising at each level of the frame, in a horizontal plane, perpendicular braces and crossbeams, supporting side-pieces of the reels essentially side by side on edge above two of said braces of said frame and resting directly on only a rear one of said two braces, a transverse bar engaging the forward one of said two braces and taking the weight of the reels, guides supporting said transverse bar at opposed ends in said crossbeams, said transverse bar being pushed toward said forward brace by the weight of the reels, forming with said forward brace said two jaws for gripping the product.

4,342,432

CONTROL SYSTEM FOR SLITTER-REWINDER APPARATUS

Arnold M. Lund, and Morten A. Lund, both of 906 Boardwalk, San Marcos, Calif. 92069

Filed Jan. 30, 1981, Ser. No. 229,662

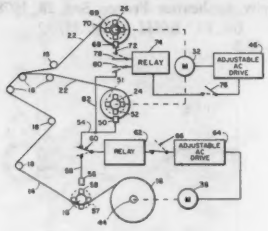
Int. Cl.³ B65H *35/02*

U.S. Cl. 242—56.2 **7 Claims**

1. A control system for a slitter-rewinder apparatus which forms a web of material into a plurality of individual rolls, the web being unwound from around a supply core and slit into strips which are rewound about a plurality of individual product cores, the apparatus having at least one takeup roller adapted to slidably receive the product cores thereabout, means for rotatably supporting the supply core and the takeup roller in spaced apart relationship with a portion of the web extending therebetween, around at least one idler roller and

past a plurality of knives for cutting the web into strips, first controllable motor means for rotating the takeup roller and second controllable motor means for rotating the supply core, the control system comprising:

sensor means for detecting the rotational speed of the product cores; and



control means responsive to the sensor means for operating the second controllable motor means to cause the speed of the supply core to automatically increase and decrease in order to maintain a predetermined relationship between the speed of the product cores and the speed of the takeup roller throughout the rewinding process.

4,342,433

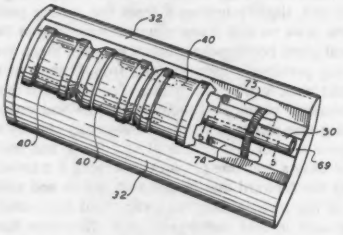
AIR DIFFERENTIAL MANDREL AND METHOD OF DIFFERENTIALLY WINDING AND REWINDING TAPES

Elvin A. Mastriani, Roseland, N.J., assignor to Arrow Converting Equipment Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 91,504, Nov. 14, 1980, Pat. No. 4,266,737. This application Feb. 23, 1981, Ser. No. 236,870

Int. Cl.³ B65H *75/24, 19/04*

U.S. Cl. 242—72 B **16 Claims**



1. Tape winding, core engaging means for winding tapes differentially from a source onto a tape winding core, on rotation of an elongated mandrel body member having flexible pressure means disposed therein; said tape winding, core engaging, means comprising:

(a) a core engaging shoe member disposed on the mandrel in registration with the pressure means therein and thereby urged outwardly thereon,

(b) an elongated rod member passing through said core engaging shoe member and aligning the same on the mandrel flexible pressure means,

(c) said core engaging shoe member being formed with an extended arcuate outer surface in a plane at right angles to the longitudinal axis of the mandrel when so disposed thereon and extending outwardly for contact with said tape winding core member,

(d) whereby tape may be wound onto said core under constant tension on rotation of the mandrel, notwithstanding caliper variations in the tape.

4,342,434

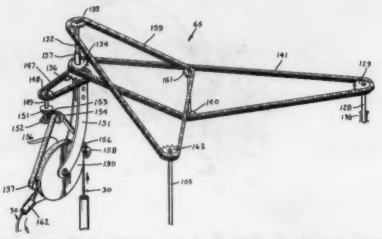
APPARATUS FOR DEPOSITING CABLE

Benjamin C. Ellis, Jr., Snellville, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 63,009, Aug. 2, 1979, Pat. No. 4,266,399. This application Mar. 2, 1981, Ser. No. 239,820

Int. Cl.³ B65H *47/14*

U.S. Cl. 242—82 **2 Claims**



1. A differential drive mechanism for a flyer-capstan of a strand element takeup, which comprises:

a flyer head input drive shaft;

a capstan input drive shaft;

a belt-driven capstan for advancing a strand element at a line speed;

means mounting said capstan for revolution about a vertical axis;

means for mounting said capstan for rotation;

means for connecting said capstan input drive shaft to said means for mounting said capstan for rotation;

means for rotating said capstan input drive shaft to rotate said capstan to advance the strand element at line speed;

means for connecting said flyer head input drive shaft to said means for mounting said capstan for revolution;

programmable means for causing said means for connecting said flyer head input drive shaft to said means for mounting said capstan for revolution to revolve said capstan about said axis at varying speeds to cause the strand element unit to be deposited about said axis in a predetermined pattern; and

means connected to said programmable means and said means for rotating of said capstan input drive shaft for causing said line speed to be maintained substantially constant.

4,342,435

TAKE-UP FORCE REDUCING MECHANISM OF A SEAT BELT RETRACTOR

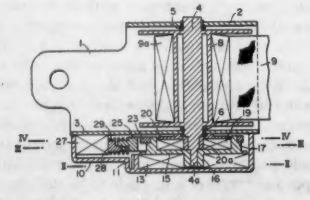
Hideo Yanagihara, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Jul. 16, 1980, Ser. No. 169,379

Claims priority, application Japan, Aug. 21, 1979, 54/105538

Int. Cl.³ A62B *35/00;* **B65H** *75/48*

U.S. Cl. 242—107 **3 Claims**



1. In a take-up force reducing mechanism of a seat belt retractor having two springs at least one of which acts for

taking up webbing and wherein webbing take-up force can be reduced by controlling at least one of said two springs, the improvement comprising:

a rotatable member connected to one of said springs for controlling the output of that spring so that when said rotatable member is in its movable condition, there is obtained an unreduced webbing take-up force and that when said rotatable member is restrained, the webbing take-up force is reduced;

a restraining member capable of assuming a restraining position in which it is engaged with said rotatable member to restrain said rotatable member and a non-restraining position in which it cannot restrain said rotatable member, said restraining member being biased toward said restraining position;

a friction cam member capable of following the rotational movement of said rotatable member due to friction therewith and also capable of assuming a first rotated position when said rotatable member is rotated in the webbing pay-out direction and assuming a second rotated position when said rotatable member is rotated in the webbing take-up direction, said friction cam member permitting movement of said restraining member to said restraining position and being conversely prevented from moving to said second rotated position by said restraining member when said friction cam member assumes said first rotated position, and said friction cam member holding said restraining member in said non-restraining position when said friction cam member assumes said second rotated position with the restraint by said restraining member being released;

electromagnetic means for moving said restraining member to said non-restraining position; and

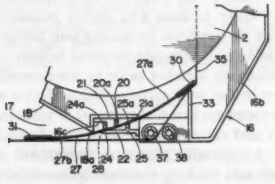
switch means for controlling said electromagnetic means, said switch means including a switch operated by said friction cam member, said friction cam member having switch operating means for closing said switch to energize the electromagnetic means when said friction cam member is in said first rotated position and opening said switch to de-energize said electromagnetic means when said friction cam member is in said second rotated position.

4,342,436

TAPE CASSETTE

Masaru Oyama, and Kenji Takahashi, both of Tagajo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,745
Claims priority, application Japan, Jun. 29, 1979, 54-90011[U]
Int. Cl.³ G11B *23/10*
U.S. Cl. 242—199 **15 Claims**



1. A tape cassette comprising:

a magnetic tape;

supply and take-up means on which said magnetic tape is wound;

cassette housing means for enclosing said supply and take-up means and including means for permitting said tape to be withdrawn from said cassette housing means when in use; and

flexible strip means affixed to said housing means for biasing said tape against said housing means to prevent movement of said magnetic tape when not in use;

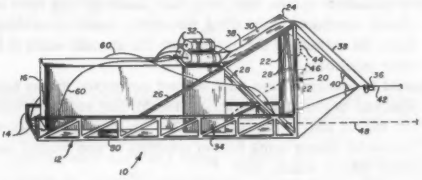
wherein said flexible strip means includes a generally flattened resilient flexible strip having a thickness, a length, and a width, and having an end portion biasing against said tape and an opening through the thickness of said strip, and said cassette housing means includes a projection extending generally in the direction of said thickness penetrating and thus engaging said opening and at least one further projection extending in a direction generally opposite the first-mentioned direction to resiliently bias said strip over the first-mentioned projection thereby to affix said resilient flexible strip to said cassette housing means.

4,342,437

HIGH ALTITUDE PLATFORM AIR DROP SYSTEM

Anthony L. Farinacci, Baldwin, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 1, 1980, Ser. No. 192,669
Int. Cl.³ B64D *1/08*
U.S. Cl. 244—137 R **10 Claims**



1. An improved device for the air dropping of cargo from an aircraft flying at a high altitude comprising:

first platform means, said first platform means having first and second ends, said platform means forming a flat rectangular surface, said platform means supporting the cargo;

two reinforcing means, said two reinforcing means being secured along both sides of said platform means between said first and second ends, said two reinforcing means each forming a supporting truss, said reinforcing means transmitting forces to said platform means;

stabilizing means, said stabilizing means defining two planes, said stabilizing means being attached to said second end of said platform means with said first plane of said stabilizing means being perpendicular to said second end of said platform means and with said second plane of said stabilizing means being extended from said first plane to said two reinforcing means, said second plane of said stabilizing means forming an angle between said first plane and said platform means surface of less than 90°, said stabilizing means transmitting forces to said reinforcing means;

ramp means, said ramp means providing a flat surface, said ramp means being secured to said stabilizing means with the surface thereof lying in a plane parallel to said second plane defined by said stabilizing means;

first parachute means, said first parachute means having an open and a closed condition, said first parachute means being capable of retarding the descent of the cargo when in the open condition so that it can land intact, said first parachute means attached to said first platform means by lines, said first parachute means being positioned above the cargo;

first parachute release means, said first parachute release means holding said first parachute means in said closed condition, said first parachute release means deploying said first parachute means to said open platform when force is applied thereto;

second parachute means, said second parachute means having an open and closed condition, said open condition of said second parachute means allowing a rapid descent of the cargo, said second parachute means in the open condition supplying force to provide restoring torque to the cargo,

said second parachute means being secured to said first plane of said stabilizing means;

second parachute release means, said second parachute release means holding said second parachute means in said closed condition, said second parachute release means deploying said second parachute means to said open condition when force is applied thereto;

bridle means, said bridle means securing said second parachute means to said first plane of said stabilizing means, said bridle means secured to each corner of said first plane of said stabilizing means, said bridle means transmitting force from said second parachute means to said stabilizing means;

first connector means, said first connector means being attached to said bridle means, said first connector means also being attached to said second parachute means, said first connector means further being attached to said first parachute release means, said first connector means including a barometric sensor unit and a cutter which is activated by said sensor at a desired altitude, said cutter disconnecting said bridle means from said first connector means when activated;

third parachute means, said parachute means having open and closed conditions, said third parachute means providing a force for extracting the cargo from the aircraft when in the open condition;

second connector means, said second connector means being attached to said third parachute means, said second connector means also being attached to the cargo, said second connector means being further attached to said second parachute release means; and

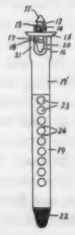
second connector release means, said second connector release means detaching said second connector means from the cargo after extraction from aircraft, said second connector release means being secured to said platform means within a space provided on said reinforcing means.

4,342,438

FLEXIBLE STRAP WITH INTEGRAL ATTACHMENT MEANS

Robert Speedie, Victoria, Australia, assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 14, 1980, Ser. No. 167,967
Claims priority, application Australia, Jul. 20, 1979, PD9658
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—73 **9 Claims**



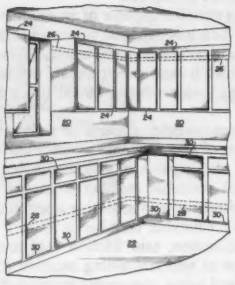
1. A cable strap fastener comprising a flange having on one side a plug member for engagement in a hole in a panel so as to hold the fastener in position and on the other side a stud coaxial with the plug member, and a strap member having a bifurcated end attached to and extending from the flange in the same direction as the stud, said strap member having at least one hole for engagement by the stud so as to hold the strap member in the form of a loop, whereby said flange, along with the plug member and the stud, may be rotated relative to the bifurcated end of the strap.

4,342,439

APPARATUS FOR TEMPORARILY HANGING FOR ALIGNING CABINETS AND THE LIKE

Wally Bruner, 6016 Telegraph Rd., Alexandria, Va. 22310

Filed Dec. 26, 1979, Ser. No. 107,244
Int. Cl.³ F16M *13/00*; A47B *67/02*
U.S. Cl. 248—544 **12 Claims**



1. An aligning apparatus for temporarily hanging and aligning cabinets and the like upon a generally vertical wall surface, said apparatus comprising:

a first elongate member having an upper edge and a lower edge and operable to be mounted in a horizontal posture upon a generally vertical wall surface, said first elongate member having a plurality of parallel slits cut inwardly and downwardly from said upper edge and of equal length so as to have slit bottoms terminating along a line parallel to said upper edge and forming a plurality of tabs so that when said tabs are bent outwardly from said wall at an acute angle with said wall, V-shaped slots are formed parallel to said wall surface;

a second elongate member operable to be secured upon a backing member of a cabinet or the like to be mounted upon said generally vertical wall surface, said second elongate member having,

a generally flat mounting portion operable to be secured to the backing member of the cabinet or the like, and

a lateral edge portion angled away from said mounting portion, wherein

said first elongate member, when horizontally installed across a wall surface with said plurality of V-shaped slots directed upwardly, can be cooperatively engaged by the later edge portion of said second elongate member mounted upon the back of a cabinet or the like whereby the cabinet may be temporarily hung upon the wall surface in a plumb posture and lateral positioning of the cabinet may be achieved by sliding said lateral edge portion of said second elongate member within said slots of said first elongate member prior to permanently securing the cabinet to the wall surface, and said first and second elongated members being of material of sufficient strength to support said cabinet and of sufficient flexibility to collapse into a generally planar as permanent securement means push said backing member against said wall.

4,342,440

CONCRETE DECK FORMING APPARATUS

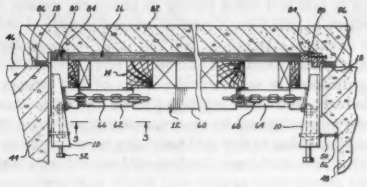
Everett A. Eyden, P.O. Box 1873, Sedona, Ariz. 86336

Division of Ser. No. 133,904, Mar. 25, 1980. This application May 18, 1981, Ser. No. 264,353
Int. Cl.³ E04G *11/00*
U.S. Cl. 249—19 **15 Claims**

1. Apparatus for temporarily supporting a poured concrete deck across a span intermediate two opposed supporting elements, said apparatus comprising in combination:

(a) a pair of opposed hangers, each said hanger including:

i. means for detachably supporting said hanger in a depending relationship from one of the support elements;
ii. a vertically positionable ledger support plate;
iii. means for vertically adjusting the position of said ledger support plate from above and below said hanger; and



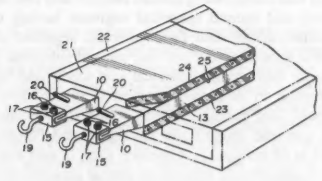
(b) a ledger locatable intermediate an opposed pair of said hangers for supporting deck joists and decking elements upon which the concrete for forming said deck is poured, said ledger including means for engaging said ledger support plates of said opposed pair of hangers in a non-interfering relationship with said adjusting means.

4,342,441

CORE FOR USE IN CASTING HOLLOW CONCRETE SLAB AND METHOD OF CASTING SUCH SLAB

Isao Maebara, and Koichiro Fujio, both of Tokyo, Japan, assignors to Ishikawajima-Kenzai Kogyo Co., Ltd., Japan

Filed Jun. 27, 1980, Ser. No. 163,559
Claims priority, application Japan, Jun. 29, 1979, 54-82478
Int. Cl.³ B29C *1/12;* B28B *7/32*
U.S. Cl. 249—65 **8 Claims**



1. A core for use in casing a long concrete slab for forming a continuous hole extending along its length, which core comprises a relatively rigid resilient elongated hollow body having closed opposite ends, said hollow body having an opening formed through a wall of said hollow body at one end thereof, and a contractible filling member made of an open-cell foamed material and filling said hollow body, said body being folded at one end thereof and enclosed by a channel member having a hook attached thereto, the channel member being secured to said core.

4,342,442

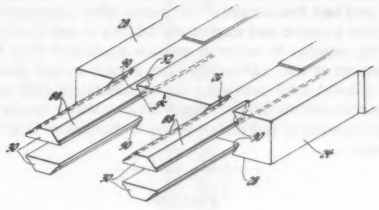
BATTERY CONTAINER MOLD

William J. Perkins; William C. Vest, both of Anderson; Walter A. Grannen, III, Bargersville, and Robert E. Meyer, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 172,513, Jul. 28, 1980, abandoned. This application May 18, 1981, Ser. No. 264,241
Int. Cl.³ B29C *1/06, 7/00;* B29F *1/022, 1/14*
U.S. Cl. 249—67 **6 Claims**

5. A mold for injection molding a battery container having bottom, side and end walls and at least one partition parallel to said end walls and dividing said container into at least two compartments for housing the electrochemical innards of said battery, said container having a plurality of thin, resilient ribs integral with and projecting at acute angles from said partition and end walls into said compartments for holding said innards substantially centrally of said compartments, said mold including female and core-bearing portions coacting in a mold-closed position to define a mold cavity corresponding to said container, said core-bearing portion including a plurality of mandrels each having an exterior surface for shaping the internal surface of an associated compartment and means for stripping said container from said mandrels, said stripping means including:

a plurality of mortises in said mandrels each mortise being defined in part by at least one wall angling inward from said mandrel surface at substantially said acute angle;



substantially complementary-shaped ejector bars reciprocally slideable within said mortises, said ejector bars each being defined in part by at least one face juxtaposed said mortise side wall and being adapted for movement between an extended container-release position and a retracted container-molding position;

a recess in said face of said bar defining a rib-forming cavity between said ejector bar and an associated mortise wall while said ejector bar is in said retracted position; and

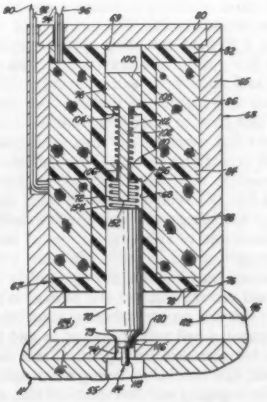
means for moving said ejector bars between said retracted and extended positions such that said ejector bars travel with said ribs to free said ribs from said rib-forming cavity at the time said container is stripped from said mandrel.

4,342,443

MULTI-STAGE FUEL METERING VALVE ASSEMBLY

Russell J. Wakeman, Novi, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,361
Int. Cl.³ B05B *1/30;* F02M *51/06*
U.S. Cl. 251—137 **21 Claims**



1. A valving assembly for variably restricting fluid flow, comprising housing means, bobbin means carried by said hous-

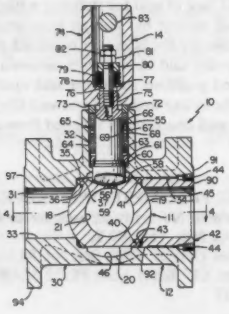
ing means, first and second axially extending passage means in said bobbin means, first electrical coil means carried by said bobbin means as to be disposed in relatively close proximity to said first passage means, second electrical coil means carried by said bobbin means as to be disposed in relatively close proximity to said second passage means, a valving member slidably received by said second passage means, stop means slidably received by said first passage means, and fluid orifice means, said valving member when moved in a first direction to a closed position being effective to terminate flow of fluid through said orifice means, said valving member when moved in a second direction opposite to said first direction being effective to permit flow of said fluid through said orifice means, said second electrical coil means when energized being effective to move said valving member in said second direction, and said first electrical coil means when energized being effective to move said stop means relative to and toward said valving member in order to provide a selected limit to the movement of said valving member in said second direction, said selected limit providing for movement of said valving member in said second direction a distance which results in the partial opening of said orifice means to the flow of fluid therethrough.

4,342,444

BALL VALVE ASSEMBLY

William G. Sonderman, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Oct. 14, 1980, Ser. No. 196,588
Int. Cl.³ F16K 5/06
U.S. Cl. 251—315 **12 Claims**



1. A ball valve assembly including a one-piece single body defining the entire housing structure of said valve assembly and having a passage extending therethrough; said passage including a first portion of a first constant size extending from one end of said single body and a second portion of a second constant size larger than the first constant size of said first portion of said passage extending from the other end of said single body, a first spherical seat disposed in said passage adjacent the end of said first portion of said passage, a single-piece insert disposed in said second portion of said passage, said insert being free of circumferential fastening threads and having a passage extending therethrough of the same constant size as the constant size of said first portion of said passage and coaxial therewith, means to retain said insert within said single body, a second spherical seat disposed solely in said second portion of said passage adjacent said passage in said insert, and each of said first and second spherical seats being formed of a resilient material; a ball valve disposed in said passage in said single body between said first spherical seat and said second spherical seat, said ball valve having a first spherical segment at one end for engaging said first spherical seat, a second spherical segment at its other end for engaging said second spherical seat, each of said first spherical segment and said second spherical segment being less than a hemisphere and having its inner periphery of the same length, and means connecting said first spherical segment and said second spherical segment to each other; said connecting means having its periphery no greater than the inner periphery of each of said first spherical segment and said second spherical segment; each of said first spherical segment, said second spherical segment, and said connecting means of said ball valve having its periphery smaller than the periphery of said second portion of said passage in said single body to enable insertion of said ball valve through said second portion of said passage in said single body prior to said insert being disposed in said second portion of said passage in said single body, said insert exerting a force on said second spherical seat when retained by said retaining means to exert a force on said ball valve so that said ball valve is held against said first spherical seat, said insert holding said second spherical seat in sealing engagement against said single body and against said ball valve, said second spherical seat serving the dual purpose of providing a seal between said ball valve and said single body and providing the only seal between said insert and said single body; and connecting means having a passage extending therethrough of the same constant size as said first portion of said passage in said single body and said passage in said insert; turning means supported by said single body to turn said ball valve to an open position in which said passage in said connecting means of said ball valve communicates said first portion of said passage in said single body with said passage in said insert and a closed position in which said connecting means blocks communication between said first portion of said passage in said single body and said passage in said insert; said connecting means having cooperating means to cooperate with said turning means to enable said turning means to turn said ball valve, said cooperating means not extending beyond the periphery of said connecting means and not communicating with said passage in said connecting means, said connecting means having its outer surface uninterrupted except for the ends of said passage and said cooperating means, each of said first spherical segment and said second spherical segment having its outer surface uninterrupted; said first spherical segment engaging only said first spherical seat and said second spherical segment engaging only said second spherical seat when said ball valve has been turned to its closed position in which flow cannot occur through said passage in said connecting means of said ball valve; and said single body having an end flange at each end defined as an integral part thereof, each of said end flanges having holes specifically located to enable attachment of each of said end flanges by attaching means to a similar end flange on another element having a passage extending therethrough of the same size as said first portion of said passage in said single body, said passage in said connecting means of said ball valve, and said passage in said insert.

4,342,445

SELF-ALIGNING TRUNNION BRACKET FOR METALLURGICAL VESSELS

Joseph J. Luczak, New Castle, and Rashed N. Nagati, Mars, both of Pa., assignors to Pennsylvania Engineering Corp., Pittsburgh, Pa.

Filed Nov. 3, 1980, Ser. No. 202,941
Int. Cl.³ C21C 5/50
U.S. Cl. 266—296 **11 Claims**

1. A metallurgical vessel including:

a trunnion support at least partially surrounding said vessel,

a plurality of bracket means affixed to said vessel in spaced-apart relation for supporting said vessel on said trunnion support, said bracket means having a pair of arcuate lateral edges extending generally away from said vessel,

retainer means for each bracket means and including a pair of gib blocks affixed to said trunnion support adjacent each lateral edge of said bracket means and being positioned to prevent displacement of said bracket means away from said trunnion support,

said retainer means also including first and second portions disposed respectively between said gib blocks and the

lateral edges of said bracket means and each portion having a surface complimentary to and disposed adjacent one of the arcuate lateral edges on said bracket means to permit angular reorientation of said bracket means relative to said gib blocks should said vessel become distorted in operation,

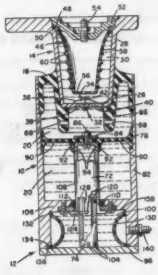
said retainer means also including a third portion interconnecting said first and second portions and disposed between said bracket means and said trunnion support and being slidably engaged by the bracket means.

4,342,446

SELF-LEVELING VISCOUS ELASTIC DAMPER

Gerald E. Eaton, Wakeman; Emile M. Shtarkman, and Daniel S. Snyder, both of Norwalk, all of Ohio, assignors to Gould Inc., Cleveland, Ohio

Filed Nov. 18, 1980, Ser. No. 207,914
Int. Cl.³ F16F 9/08
U.S. Cl. 267—35 **18 Claims**



1. In a viscous spring damper including inner and outer members connected by an elastomeric shear spring; having a main fluid chamber therebetween communicating with a second chamber in said inner member through restricted orifice means, an expandible and contractible gas chargeable elastomeric bladder in said second chamber, and first valve means for selectively charging said bladder with gas pressure, said members being relatively movable for stressing said shear spring and varying the volumes of said chambers while effecting fluid flow therebetween through said orifice means, the improvement comprising: a third fluid chamber in said outer member communicating with said main fluid chamber through restricted pump means, whereby relative movement between said members operates said pump means for leveling said viscous elastic damper.

4,342,447

GAS SPRING WITH TUBULAR SHELL SEAL

Thomas O. Marx, Rockton, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Aug. 25, 1980, Ser. No. 180,623
Int. Cl.³ F16F 9/04
U.S. Cl. 267—64.23 **11 Claims**

1. In a gas spring having a cylinder open at one end and closed at the other end, a piston slidable in said cylinder, a rod fixed to said piston and projecting out of said cylinder through the open end thereof, and a body of oil and a gas under pressure in said cylinder, the combination of, a rigid annulus disposed in said cylinder adjacent said open end thereof and encircling said rod, a tubular shell located between said closed end and said rigid annulus and having an outer generally annular end portion abutting said annulus and an inner end surrounding said rod with a generally cylindrical wall connecting said outer end portion and inner end, said shell being made of a flexible and resilient material, a first annular portion formed on said outer end portion of said shell adjacent said rod and extending around the entire inner periphery of said outer end portion, said first annular portion resiliently engaging said rod around the entire circumference thereof to form a seal between the shell and the rod, and a second annular portion formed on the exterior of said shell around the entire outer periphery of said outer end portion and engaging the inside of said cylinder around the entire circumference thereof to form a seal between the shell and the cylinder whereby said shell seals the open end of the cylinder, said inner end of said shell normally resiliently

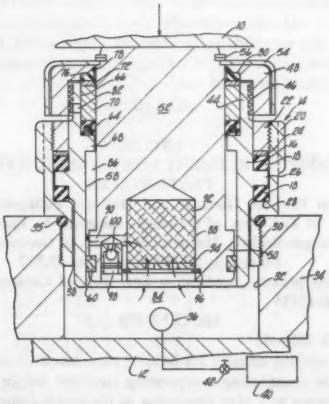
engaging said rod around the periphery thereof and said wall of said shell being spaced from said rod whereby the shell and the rod define an annular cavity, said cavity being filled with at least a portion of said body of oil, said wall expanding and contracting in response to differences of the pressures in said cylinder and in said cavity as said piston slides back and forth in the cylinder thereby to pump oil into and out of said cavity between said inner end and said rod and maintain the cavity full of oil.

4,342,448

GAS-OPERATED CYLINDER

Bernard J. Wallis, 25200 Trowbridge Ave., Dearborn, Mich. 48124

Filed Apr. 4, 1980, Ser. No. 137,369
Int. Cl.³ F16F 9/02
U.S. Cl. 267—119 **4 Claims**



1. In a press, a fluid spring assembly for use between a pair of metal die forming members which move relatively toward

and away from each other, said fluid spring assembly comprising a fluid cylinder fixedly mounted at one end thereof on one of said die members, said cylinder having an axially extending bore in which a close fitting piston is axially slideable, said piston dividing the cylinder into a working chamber and an idle chamber which vary inversely in size in response to reciprocation of the piston, said working chamber communicating with a reservoir of gas under relatively high pressure, said piston having a piston rod projecting axially through the idle chamber and outwardly through the other end of the cylinder for engagement with the other die member, said piston rod having a cross section smaller than the piston so that the cross sectional area of the piston exposed to the idle chamber is less than the cross sectional area of the piston exposed to the working chamber, means forming a passageway extending between the working chamber and the idle chamber to permit relatively free flow of the gas therebetween in response to reciprocation of the piston, said other end of the cylinder having an end wall provided with a central aperture through which the piston rod projects, said cylinder bore being provided with a circumferentially extending shoulder spaced a fixed distance axially from said end wall, an annular seal seated on said shoulder and engaging the periphery of the piston rod to prevent leakage of gas from the idle chamber outwardly of the cylinder through said aperture, said seal being axially displaceable from seated engagement with said shoulder toward said end wall in response to the axial force exerted thereon by the high pressure gas in said idle chamber, said aperture being defined at least in part by a conical surface which inclines radially inwardly in a direction axially outwardly of the cylinder, an annular rod wiper disposed in said aperture, said rod wiper having an axially inner body and an axially outer lip, the radially outer surface of said lip conforming in shape to and being seated against said conical surface, the inner periphery of said lip being in sealing engagement with the outer periphery of the piston rod, a rigid spacer extending axially between said annular seal and the axially inner end of the rod wiper body, said spacer being axially displaceable in said cylinder toward said end wall by the pressure of the gas in the idle chamber exerted axially against said seal, said wiper being formed of a material that compresses axially in response to the axial force exerted thereon by the axially displaceable spacer whereby the pressure of the gas in the idle chamber is exerted axially against the axially inner end of the wiper by said seal and the axially displaceable spacer to axially compress the wiper and, as the inner periphery of the wiper lip tends to enlarge due to wear from engagement with the piston rod, the rod wiper compresses axially as a result of said axial force thereon and as a result of said compression, the conical surface of said aperture causes the wiper lip to be cammed progressively radially inwardly to maintain said sealing engagement with the outer periphery of the piston rod.

4,342,449

CLAMPING ELEMENT FOR STORAGE BATTERY PLATE STACKS

Joachim Illmann, Garbsen, and Heribert Füllfgraf, Suthfeld, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 25, 1979, Ser. No. 42,577

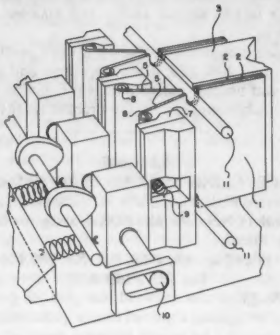
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825126

Int. Cl.³ B25B *1/20*

U.S. Cl. 269—43 **5 Claims**

1. Clamping element for holding plate stacks of lead storage batteries constituting a separating partition within a cassette conforming to a plan dimension of the block casing, wherein the clamping element consists of two closely adjacent preformed leaf springs,

wherein wedge-shaped elements which are slideable between the spring portions are provided for the clamping of the springs, and



wherein the wedge-shaped elements are attached to a common arm and are slideable by means of a cam shaft.

4,342,450

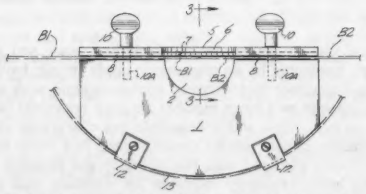
BAND SAW JIG

Thomas J. Maddock, 44561 McKenzie Hwy., Leaburg, Oreg. 97401

Filed May 19, 1980, Ser. No. 150,999

Int. Cl.³ B25B *1/00*

U.S. Cl. 269—87 **3 Claims**



1. A band saw soldering jig for retention in a vise and comprising in combination,

a main body having an irregular upper surface to provide an abutment therealong against which end segments of a band saw blade may be placed in an aligned manner preparatory to soldering of same to one another, said main body defining a centrally located recess so as to avoid contact with the blade ends being soldered to avoid resultant heat loss therefrom by conduction,

a clamping member in place above said upper surface of said main body,

adjustable means engaged with said main body for urging said clamping member into engagement with the end segments of the blade to lock same in place against the irregular upper surface of said main body, and

said clamping member defining an open area permitting access to the blade end segments clamped thereby for purposes of facilitating soldering of same.

4,342,451

COMBINATION CAST CHAIR AND SPICA TABLE

Ross L. Teague, 11313 Bel Air Pl., Oklahoma City, Okla. 73120

Filed Sep. 19, 1980, Ser. No. 188,434

Int. Cl.³ A61F *5/04*

U.S. Cl. 269—328 **9 Claims**

1. A combination cast chair and spica table, comprising:

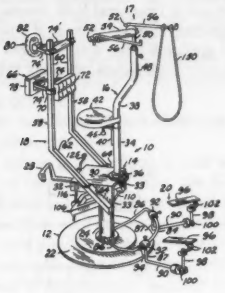
base means including an upright shaft;

platform means horizontally overlying said shaft;

generally vertical column means supported by said platform means;

a seat horizontally supported by said column means intermediate its ends;

torso support means including a pair of parallel bars connected with said platform means for forming an upright



back rest adjacent said seat and opposite said column means when in one position and forming a horizontal torso support lying in the horizontal plane of said seat when in another position; and,

vertically adjustable and extensible feet and leg support means for supporting the feet and legs of a patient.

4,342,452

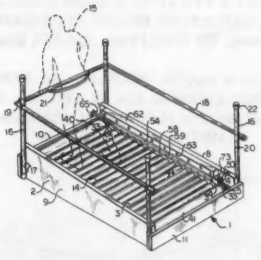
TREADMILL DEVICE

H. Wayne Summa, Rte. 1, Box 466, Flemington, Mo. 65650

Filed Jan. 25, 1980, Ser. No. 115,542

Int. Cl.³ A63B *23/06*

U.S. Cl. 272—69 **3 Claims**



1. A treadmill exercising device comprising:

(a) a rigid frame having spaced side members and front and rear ends;

(b) a plurality of rollers positioned within said frame and extending laterally between said side members and providing a central upper surface for walking directly upon said rollers; said rollers having opposite end portions rotatably mounted to said side members;

(c) drive means engaged with said rollers and spaced laterally from said central upper surface, said drive means unifying said rollers in driving relation whereby rotation of some of said rollers causes rotation of other of said rollers and controls free rotation of all of said rollers;

(d) braking means connected to said rollers and movable between a first position at which the resistance to rotation of said rollers is at a minimum and a second position at which the resistance to rotation of said rollers is at a maximum; wherein

(e) said braking means is a carriage slidably mounted to said one of said side members and controllably movable front to rear, said carriage having a plurality of wheels rotatably mounted thereto; and

(f) said carriage is mounted adjacent said rollers and is movable between a first position with said wheels spaced longitudinally between said rollers and a second position with said wheels individually generally posititoned against said rollers and exerting pressure upon said drive means to provide braking force on said rollers.

4,342,453

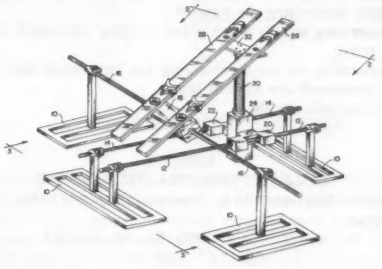
SKI TRAINING APPARATUS

Richard R. Wagner, 5930 Penfield Ave., Woodland Hills, Calif. 91367

Filed Apr. 21, 1981, Ser. No. 256,035

Int. Cl.³ A01B *23/04*

U.S. Cl. 272—97 **4 Claims**



1. Ski training apparatus comprising: a base; a pair of spaced and parallel horizontal bars supported on the base; a third horizontal bar supported on the base perpendicular to said pair of bars and displaced upwardly therefrom and extending thereacross; first bushing means slidably mounted on said pair of bars; second bushing means slidably mounted on said third bar; a compression spring coupled to said first bushing means and extending upwardly therefrom; and a pair of ski-like boards pivotally mounted at their forward ends to said second bushing means and pivotally mounted at their rear ends to said compression spring, said ski-like boards being held in spaced and parallel uni-planar relationship.

4,342,454

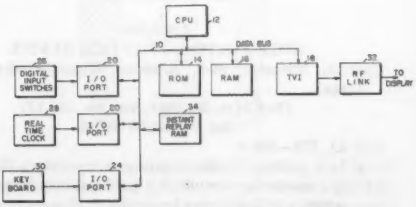
METHOD AND APPARATUS FOR INSTANT REPLAY AND OTHER CAPABILITIES FOR MICROPROCESSOR-CONTROLLED VIDEO GAMES

Ralph H. Baer, Manchester; Leonard D. Cope, Merrimack, and Thomas J. Mortimer, Amherst, all of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Jan. 8, 1979, Ser. No. 1,806

Int. Cl.³ A63F *9/22*

U.S. Cl. 273—85 G **13 Claims**



1. In a microprocessor-controlled video game including

means for generating signals representing symbols for display on the screen of a cathode ray tube and manually actuatable controls providing responsive displayed motion of said symbols on said display, apparatus for providing an instant replay capability, comprising:

means for storing signals representing the positions of said controls at predetermined intervals for a predetermined period of time;

means for establishing predetermined intervals for a predetermined period of time; and

means for outputting said stored signals to cause replay of that portion of a game previously executed during said predetermined period of time.

11. A method of providing an instant replay capability to a microprocessor-controlled video game which includes means for generating signals representing symbols for display on the screen of a cathode ray tube and manually actuatable controls providing responsive displayed motion of said symbols on said display, comprising the steps of:

generating signals when player motion commands are entered;

generating signals representing the time when said player commands are entered; and

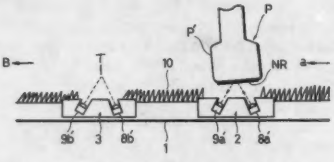
storing said signals.

4,342,455

GOLF PUTTING PRACTICE DEVICE

Toshiaki Miyamae, 36-8, Aramoto, Higashi-Osaka, Osaka, Japan

Filed Mar. 20, 1981, Ser. No. 245,652
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—186 A 2 Claims



1. In a putting practice machine comprising a flat surface having a center line on which a golf ball may be placed and over which a golf club may be swung, one or more light sources, one or more sensors of said light, which upon said ball or head of said golf club interrupting the light to a respective sensor will generate a signal indicative of the position of said ball or said head, and means for detecting the signals; the improvement comprising a plurality of pairs of signal members positioned within said flat surface, each different ones of said pairs being disposed at different distances from said center line, and each signal member consisting essentially of one said light source and one said sensor, said one light source and said one sensor being positioned at angles with respect to one another so that a straight line extending from said light source will intersect a straight line extending from said sensor at a point about where said ball or said golf club head will pass.

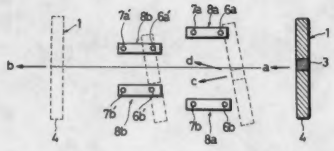
4,342,456

GOLF PUTTING PRACTICE DEVICE

Toshiaki Miyamae, 36-8, Aramoto, Higashi-Osake, Osaka, Japan

Filed Mar. 20, 1981, Ser. No. 246,121
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—186 A 2 Claims

1. In a putting practice machine comprising a flat surface having a center line on which a golf ball may be placed and over which a golf club may be swung, light sources, sensors of said light, which upon said ball or head of said golf club interrupting the light to a respective sensor will generate a signal indicative of the position of said ball or said head, and means for detecting the signals; the improvement comprising a plurality of pairs of signal members positioned well within said flat surface, each different ones of said pairs being disposed at different distances from said center line, and each signal member consisting essentially of one of said light sources and one of said sensors, said one light source and said one sensor being positioned at angles with respect to one another so that a straight line extending from said light source will intersect a straight line extending from said sensor at a point about where said ball or said golf club head will pass, and wherein further comprising non-reflective means covering the central bottom



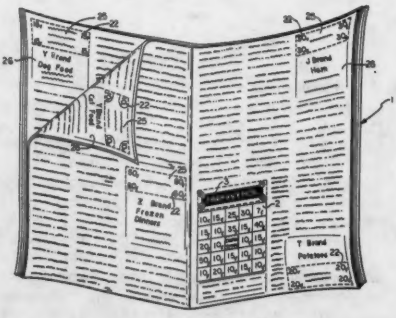
surface area of said golf club head and reflective means covering the remainder of the bottom area of the golf club head not covered by said non-reflective covering means, and wherein a first pair of said signal members are positioned from each other at a distance substantially wider than the width of said non-reflective covering on said golf club head, and an adjacent second pair of said signal means are positioned from each other at a distance slightly wider than the width of said non-reflective covering of said golf club head, whereby movement of the central bottom surface area of said golf club head off the center line will pass over different ones of said first and second sets of signal members.

4,342,457

METHOD OF PLAYING A MASS CIRCULATION PUBLICATION BINGO TYPE GAME

Maynard E. Small, 105 Ward Pkwy., Apt. 507, Kansas City, Mo. 64112

Continuation of Ser. No. 79,189, Sep. 26, 1979, Pat. No. 4,285,520. This application Jun. 12, 1981, Ser. No. 273,259
The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.
Int. Cl.³ A63F *3/06*
U.S. Cl. 273—240 9 Claims



1. A method of playing a bingo type game including the steps of:

(a) printing a single edition, run of press, multipage, and mass circulation publication;

(b) providing a playing card common to all players, said playing card being printed in said publication, said card

having a grid with several rows and columns forming a set of oriented areas, each oriented area respectively bearing individual indicia whereby every player has an identical playing card having an identical set of oriented area indicia; and

(c) printing a common set of devices in said publication, at least some of said devices being positioned at various isolated locations throughout the pages of the publication so as to be spaced apart from one another by printed subject matter unrelated thereto;

(d) providing on each device respectively an individual indicia, whereby every player has an identical set of indicia bearing devices;

(e) locating at least some of said devices on pages separate from said playing card; and

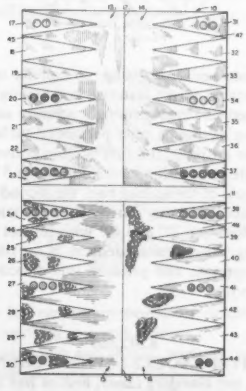
(f) said area indicia being related to said device indicia so that selected device indicia from the device indicia set match with selected indicia from the area indicia set such that said matched area indicia describes a predetermined pattern on said playing card grid; whereby each player is urged to scan each page of said publication to determine the presence of said devices in order to determine said predetermined pattern.

4,342,458

MULTI-PLAYER BACKGAMMON

Rick Lane, 845 Arlingwood Ave., Jacksonville, Fla. 32211; Donald C. Kafka, and Jayne M. Kafka, both of 108 Windsor St., Simpsonville, S.C. 29681

Filed Sep. 18, 1980, Ser. No. 188,358
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—248 **11 Claims**



1. A backgammon game for simultaneous playing of up to four people, comprising:

a. a gameboard having a rectangular shape wherein said rectangular area comprises quadrant;

b. said gameboard consisting of seven playing points per quadrant;

c. further comprising four sets of 10 playing pieces, each set having a different indicia; and

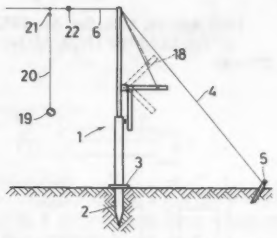
d. a random number generating device; and wherein all points in each quadrant have an indicia corresponding to the indicia on the playing pieces in one of the sets; each quadrant points' indicia being different from the other quadrant points' indicia.

4,342,459

TETHERED BALL GAME APPARATUS HAVING ECCENTRIC TENSIONING MEANS

Willem J. Pretorius, Roodepoort, South Africa, assignor to Christopher P. Bath, Johannesburg, South Africa, a part interest

Filed Sep. 9, 1980, Ser. No. 185,639
Claims priority, application South Africa, Mar. 28, 1980, 80/1845
Int. Cl.³ A63B *69/40*
U.S. Cl. 273—413 **13 Claims**



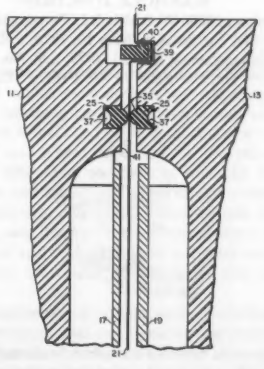
1. Ball game apparatus, comprising: a pair of horizontally spaced posts adapted to support a transverse flexible filament therebetween, a member pivotally mounted to at least one of said posts and having an attachment point for an end of said flexible filament, said attachment point and said pivotal mounting being spaced apart, and said member directly embodying means for eccentrically weighting the member relative to its pivotal mounting to gravitationally bias said member to a predetermined position in which the filament is in an initial taut condition in use, whereby when the filament is pulled the moment of force about the pivotal mounting tends to return the filament to the initial taut condition.

4,342,460

GASKET MEANS FOR ELECTROLYTIC CELL ASSEMBLY

Jeffrey D. Eng, North Vancouver, Canada, assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,978
Int. Cl.³ C25B *9/00*; F16J *15/54*
U.S. Cl. 277—1 **10 Claims**



1. An apparatus comprising in combination a plurality of electrolytic cell frames and gasket means for sealing opposing mating surfaces, the cell frames having longitudinal recesses of generally rectangular cross section for accommodating said gasket, the gasket comprising parallel side walls, bottom shoul-

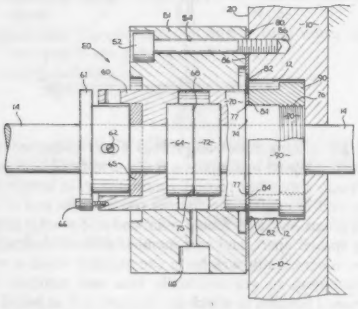
ders, an indented, arched cavity between the bottom shoulders, top shoulders and when in a relaxed state an elevated, bulb shaped bearing surface between said top shoulders, the dimensions of the indented cavity being equal to or greater than the dimensions of the elevated bearing surface, the parallel walls and shoulders of the gasket conforming in shape to the generally rectangular configuration of the recesses, said apparatus being further characterized by the absence of lateral movement of said gasket when compressed against opposing surfaces.

4,342,461

ROTATING SHAFT SEAL ASSEMBLY

Joseph Lindsay, 1821 Lacey St., Apt. D, Bakersfield, Calif. 93309

Filed Apr. 24, 1981, Ser. No. 257,211
Int. Cl.³ F16J *15/16, 15/54*
U.S. Cl. 277—30 **10 Claims**



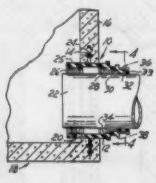
1. A mechanical rotating shaft seal assembly comprising a stuffing box gland for receiving a rotary sealing cartridge and a stationary sealing cartridge, and for mounting onto the face of a stuffing box, an axially flexible annular diaphragm member secured between said stuffing box gland and said face and extending radially inwardly to cover a portion of said stuffing box, means for coupling said stationary sealing cartridge to said diaphragm member whereby said stationary sealing cartridge may axially align itself with said rotary sealing cartridge.

4,342,462

ADJUSTABLE SEAL MEMBER FOR CONDUIT TO MANHOLE JUNCTION

John Carlesimo, 29800 W. 8 Mile Rd., Farmington, Mich. 48024

Division of Ser. No. 904,426, May 10, 1978, Pat. No. 4,200,299.
This application Jul. 20, 1979, Ser. No. 59,028
Int. Cl.³ F16J *15/10*; F16L *25/00*
U.S. Cl. 277—101 **2 Claims**



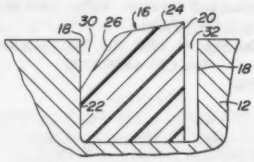
1. In a junction between a manhole well and a conduit having a generally cylindrical peripheral surface and an end disposed within an opening in a wall of said manhole well projecting within said manhole well, a one-piece seal member having a substantially cylindrical tubular body of elastomeric material comprising a sleeve having a first end portion projecting outwardly from said opening in clamped sealed relationship to the peripheral surface of said conduit and an integral outwardly flared annular flange in sealing engagement with the edge of said opening, wherein the first end portion of said sleeve in clamped sealed relationship to the peripheral surface of said conduit has an internal diameter adjustable within a range to conform to the outer diameter of said conduit, said first end portion of said sleeve comprising a plurality of contiguous integral stepped annular portions of decreasing external and internal diameters from proximate said flange to the end of said end portion, a plurality of substantially parallel annular ribs peripipherally integrally formed on said end portion, each pair of adjacent ribs corresponding to one of said decreasing external and internal diameter annular portions and defining a holding means therebetween for an adjustable strap clamping said end portion to the peripheral surface of said conduit and a plurality of circular parallel ribs integrally formed on the internal surface of each of said stepped portions, said sleeve further comprising a second end portion projecting within said manhole well surrounding the end of said conduit projecting within said manhole well, and means for clamping said sleeve second end in sealed relationship to the peripheral surface of said end of said conduit projecting within said manhole well.

4,342,463

SPRING SEAL

John A. Burke, Rocky River, Ohio, assignor to Green, Tweed & Co., Inc., North Wales, Pa.

Filed Oct. 16, 1980, Ser. No. 197,443
Int. Cl.³ F16J *15/00, 15/24*
U.S. Cl. 277—177 **2 Claims**



1. A one-piece seal comprising: an annular sealing ring of resilient deformable plastic material, said sealing ring having a radially disposed side face defining a pressure side of the ring, said sealing ring having its inner peripheral surface defined by two contiguous portions, the first portion converging inward toward said side face with a taper of between 5° and 15° with respect to the axis of the sealing ring, the second portion being an angled surface extending outwardly from said first portion at an angle of between 25° and 40° with respect to a radius on said sealing ring, the opposite side faces of the ring are parallel, the side face opposite said pressure side directly intersecting said second portion.

4,342,464

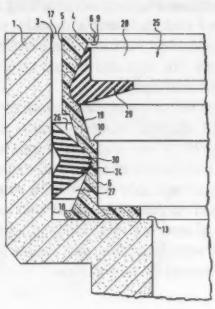
GASKET FOR A SOCKET-SPIGOT CONNECTION

Franz J. Wolf, and Hansjörg Lauer, both of Bad Soden-Salmünster, Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co., Bad Soden-Salmünster, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,337
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023619
Int. Cl.³ F16J *15/10, 15/32*
U.S. Cl. 277—207 A **13 Claims**

1. A gasket for a socket-spigot connection between a socket end and a spigot end of two pipes to be connected, said gasket being of a material stable as to its shape and being adapted to carry at its inner radial side at least one resilient sealing ring and at its outer radial side at least one other sealing ring, said gasket having an outer diameter equal to or slightly smaller than the inner diameter of said socket, said gasket having an

inner diameter equal to or greater than the outer diameter of said spigot, said gasket having a radial inner ring groove and a radial outer ring groove, said radial inner ring groove being constructed and arranged to receive one of said seal rings to provide a predetermined maximum pressure engagement between said one seal ring and the outer surface of said spigot, said radial outer ring groove being constructed and arranged to receive another of said seal rings to provide a predetermined maximum pressure engagement between said other seal ring and the inside surface of said socket.

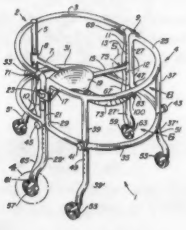


4,342,465

SAFETY WALKER

Delia Stillings, 1150 W. Prince Rd.-No. 7-B, Tucson, Ariz. 85705

Filed Aug. 25, 1980, Ser. No. 181,042
Int. Cl.[3] A61H *3/04;* B62D *11/00*
U.S. Cl. 280—87.02 W **11 Claims**



1. A walker for supporting an elderly or disabled person, said walker comprising in combination:

(a) a frame having first and second sections, said frame surrounding a region occupied by the person;

(b) hinge means for pivotally connecting said first and second sections together, said first and second sections being pivotable about said hinge means to allow the person to enter said region by passing between hinged ends of said first and second sections;

(c) locking means for rigidly locking said free ends together after the person has entered said region to securely enclose the person in said region;

(d) gripping means for allowing the person to grip said walker to support himself and to move said walker;

(e) a plurality of legs rigidly attached to respective areas of said first and second sections, each of said legs having a caster attached to the lower end thereof; and

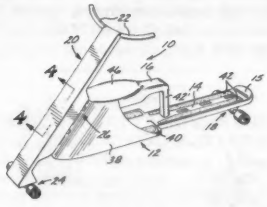
(f) a seat connected to one of said first and second sections.

4,342,466

SCOOTER WITH SEAT

Daniel Morgan, Long Beach, Calif., assignor to Irving Bullet, Jr., Carson and Maurice M. Decuir, Long Beach, both of, Calif., part interest to each

Filed Feb. 8, 1980, Ser. No. 119,872
Int. Cl.[3] B62B *7/04;* B62M *29/00*
U.S. Cl. 280—87.03 **8 Claims**



1. A scooter comprising:

a body section having a deck and a seat carried above said deck and having a pair of spaced apart wheels mounted beneath the rear extremity of said deck,

a steering post positioned in front of said body section and having handlebars at its upper extremity and a pair of spaced apart wheels at its lower extremity, and

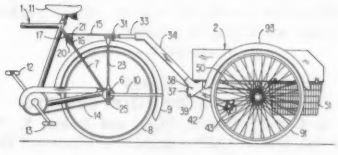
a resilient, elastic rubber hinge partially embedded in both said body section and said steering post to join said body section and said steering post together.

4,342,467

CART FOR VEHICLE WITH SINGLE REAR WHEEL

William W. Kester, 2385-B Keller Dr., Charleston, S.C. 29404

Filed May 30, 1980, Ser. No. 154,793
Int. Cl.[3] B62K *27/00*
U.S. Cl. 280—204 **15 Claims**



1. A device securable to a vehicle with a single rear wheel comprising:

a. cart means which is ground engaging and which is securable to said vehicle with a single rear wheel;

b. attachment means adjustably secured to said vehicle with a single rear wheel at variable heights above the axle of said single rear wheel depending on the radius of said single rear wheel and securable to said cart means at a point above said single rear wheel of said vehicle;

c. a cart framework, comprising a floor section within said cart means, said floor section positioned above the center of gravity of said cart means and said floor section positioned above the center of gravity of said single rear wheel;

d. two independent wheel systems, each of which is ground-engaging, whereby said cart framework is secured to said two independent wheel systems;

e. an independent axle housing comprising a plurality of bearings secured to said cart framework;

f. an axle rotatable within said plurality of bearings secured within said axle housing;

g. a wheel which is ground-engaging and is secured to said axle; and

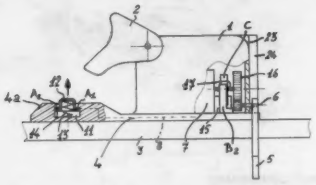
h. a basket secured below said floor section and behind each axle housing of said two independent wheel systems.

4,342,468

SKI BRAKE

Jean J. A. Beyl, Nevers, France, assignor to Ste Look, Nevers, France

Continuation-in-part of Ser. No. 23,035, Mar. 23, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 186,952
Claims priority, application France, Apr. 15, 1978, 78 10039
Int. Cl.³ A63C 7/10
U.S. Cl. 280—605 8 Claims



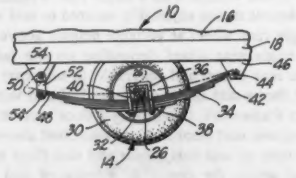
1. A ski brake adapted to be associated with a ski binding for a ski boot, comprising a pair of rotatably mounted braking arms movable between an inactive position and an active braking position, and control means for actuating said braking arms from one position to the other, said control means comprising a reversible electric motor, a drive unit connecting said motor to said rotatably mounted arms, a source of power, spring biased switch means, a pusher button adapted to be positioned beneath the ski boot for actuating said spring biased switch means, and means interconnecting said motor to said source of power through said switch means in such a manner that when said switch means is actuated by the ski boot against the action of the spring said motor moves said braking arms through said drive unit to their inactive position, and when said switch means is biased by said spring means in the absence of the ski boot, said motor moves said braking arms through said drive unit to their active braking position.

4,342,469

TRAILER SUSPENSION SYSTEMS

Frank G. Corner, Mission Viejo, and Robert E. Wilkinson, Riverside, both of Calif., assignors to Fleetwood Enterprises, Inc., Riverside, Calif.

Filed Feb. 6, 1980, Ser. No. 119,001
Int. Cl.³ B60G 11/02
U.S. Cl. 280—718 6 Claims



1. A trailer suspension system for use as a part of a complete trailer which is adapted to be towed behind a moving vehicle, said trailer including a body structure having a front, a rear, sides and a bottom, wheels located substantially adjacent to said sides between said front and said rear and extending generally beneath said body, said suspension system including an individual suspension means connecting each of said wheels to said body structure, each of said suspension means being capable of permitting movement of the wheel associated with it in a generally vertical direction in response to surface irregularities in which the improvement comprises:

an axle means connecting each of said wheels to another of said wheels, said wheels being located on the ends of said axle means, said axle means extending beneath said bottom and being movable with respect to said body structure,

each of said suspension means comprising a leaf spring having front and rear ends and a shackle, said shackle being pivotally connected between the front end of said spring and said body, the rear end of said spring being pivotally connected to said body,

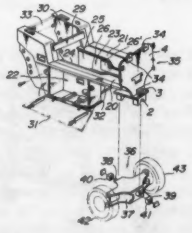
said axle means being connected to said springs between the ends of said springs, whereby each of said suspension means is capable of moving in response to an applied force so as to vary the angle of the wheel associated with it and the position of said axle means with respect to said body and the wheel on the other end of said axle means so as to be capable of steering said trailer as said trailer is towed behind said vehicle so that said trailer follows the direction of movement of said vehicle.

4,342,470

FRAME STRUCTURE FOR A FORK LIFT TRUCK

Minoru Matsuda, Hamura, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 27, 1980, Ser. No. 153,655
Claims priority, application Japan, Mar. 29, 1979, 54/65533
Int. Cl.³ B62D 21/12
U.S. Cl. 280—785 2 Claims



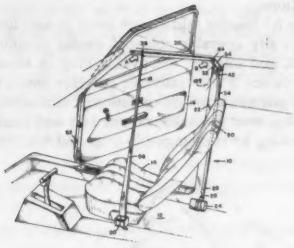
1. A frame structure of a fork lift truck including a steering axle assembly provided with a pair of longitudinally spaced pivots defining a longitudinal axis about which steering wheels are adapted to swing, the frame structure comprising a horizontal plate member provided with means to define a pair of recesses to accommodate therein the pivots of the steering axle assembly, a pair of mounting plate members having rear portions secured on respective lower edge to the upper surface of the horizontal plate member, respectively, to form a rear frame sub-assembly, a pair of longitudinal side panels respectively provided with means to define a longitudinally extending vertical side surface to which front portion of the respective mounting plate member is secured, and further including a rear plate member secured to the upper surface of the horizontal plate member and projected therefrom generally perpendicularly, rear ends of the mounting plate members being secured to the front surface of the rear plate member and rear ends of the side panels being secured to the side edges of the rear plate member.

4,342,471

MOTORIZED PASSIVE SEAT BELT SYSTEM

Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 834,936, Sep. 20, 1977, Pat. No. 4,232,822. This application Aug. 25, 1980, Ser. No. 181,293
The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 8 Claims



1. In a passive seat belt system including a door and a seat belt adapted to be positioned about an occupant in a seat, one end of said belt being connected to a retractor on the inboard side of said seat and the other end of said belt being mounted to a structural part of said vehicle outboard of and rearward of said vehicle seat, the improvement comprising:

(a) means for automatically moving said belt into and out of an occupant-restraining position about said seat;

(b) means automatically movable into contact with and supporting said belt at a location adjacent to said other end upon movement of said belt out of said occupant-restraining position, whereby said belt is prevented from interfering with ingress to and egress from said seat, said movable means being automatically movable out of supporting contact with said belt upon movement of said belt into said occupant-restraining position; and

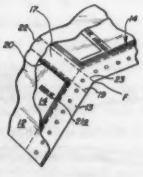
(c) a track mounted along the roof line of said vehicle and having a forward end terminating short of the front pillar of said vehicle, the rearward portion of said track extending downwardly on the B pillar of said vehicle and means movable in said track for moving said belt to its said positions.

4,342,472

CONTINUOUS FORM MULTIPLE PLY TICKET ASSEMBLY

Edward W. Heimann, Woodridge, and Donald J. Steidinger, Barrington, both of Ill., assignors to Wallace Business Forms, Inc., Hillside, Ill.

Filed Dec. 31, 1979, Ser. No. 108,850
Int. Cl.³ B41L *1/20*
U.S. Cl. 282—11.5 A 14 Claims



1. A series of connected tickets comprising elongated coextensive top and bottom plies equipped with aligned control margins along at least one longitudinally-extending edge thereof and providing a succession of packets defining individual tickets, an interior ply assembly for each ticket packet between said top and bottom plies and captured in the control margin along one longitudinally-extending edge, each interior ply assembly having a longitudinally-extending dimension shorter than the longitudinally-extending dimension of the top and bottom plies of its associated packet to provide a fold space defined by transverse edges of adjacent assemblies, and at least one line of weakness in said top and bottom plies in said fold space extending transversely of each packet generally aligned with at least one of said transverse edges, whereby the portions of said top and bottom plies in said fold space provide a waste strip to permit removal of a ticket upon demand without sacrifice of full printing of the succeeding ticket.

4,342,473

PRESSURE-SENSITIVE COPY SYSTEMS CONTAINING PHENOLIC ESTER AS COLOR-STABILIZERS

Cheng H. Chang, Fairfield, Ohio, assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 26, 1978, Ser. No. 919,086
Int. Cl.³ B41L *1/36;* B32B *3/26*
U.S. Cl. 282—27.5 14 Claims

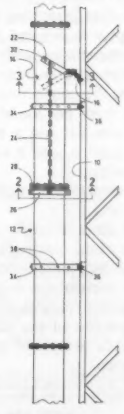
9. The pressure-sensitive transfer copy system comprising a substrate bearing isolated droplets of an oily solvent containing an acid-sensitive chromogenic compound and a phenolic color-stabilizing compound, said compound being an oil-soluble phenolic ester and hydrolyzable to a form capable of stabilizing colored marking, said coated substrate being superimposed over a recording sheet bearing a coating of an electron-accepting material.

4,342,474

WAVEGUIDE HANGER

Donald N. Sewell, Raymond, and Dwight A. Starbird, Casco, both of Me., assignors to Microwave Techniques, Raymond, Me.

Filed Nov. 3, 1980, Ser. No. 203,069
Int. Cl.³ F16L *3/18*
U.S. Cl. 285—61 6 Claims



1. A system for hanging an RF transmission line vertically on a tower which comprises

a series of vertically spaced support units mounted on the tower

each unit having

at least one support arm protruding away from the tower and

means for resiliently hinging said arm to the tower so that its free end can swing vertically through an arc;

means for suspending said transmission line from said protruding arms so that each arm assumes a portion of the load and can swing up or down with contraction or expansion of said line, and

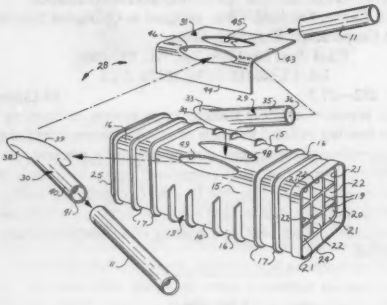
a series of stabilizing guides restraining said transmission line from lateral movement while permitting vertical movement thereof.

4,342,475

CONNECTOR AND ADAPTER FOR DUCT SYSTEMS FOR TELEPHONE CABLES AND THE LIKE

Thomas F. Moran, Aurora, Ohio, assignor to Midwest Plastic Fabricators, Inc., Chagrin Falls, Ohio

Filed Apr. 3, 1980, Ser. No. 136,914
Int. Cl.³ F16L *39/00*
U.S. Cl. 285—137 R **15 Claims**



1. A duct system for telephone cables, electrical cables, current-carrying conductors, and other cables and conductors, which comprises:

a conduit of generally rectangular cross section having generally flat exterior surfaces connected by rounded corner exterior surfaces and having therein at least two separate, parallel bores;

a hollow, tubular duct branching from the conduit; and

a connection adapted to one end to be attached to the conduit and to communicate with one of the bores of the conduit and adapted at the other end to be attached to the end of the duct, the connection comprising a sleeve element having a base portion adapted to fit against the outside of the conduit and a tubular portion extending from the base portion, and a saddle element, the saddle element comprising

a planar portion adapted to fit against a flat exterior surface of the conduit, and

a curved portion adapted to fit against a rounded corner exterior surface of the conduit, the saddle element having at least two openings therethrough, each of which will fit over the sleeve element, one of the openings in the curved portion of the saddle element, and another of the openings in the planar portion of the saddle element, the saddle element adapted to be secured to the conduit to attach the connection thereto.

4,342,476

ELECTROMECHANICAL LID LATCH ASSEMBLY

Wade R. Brown, St. Charles, and James M. Pick, Carol Stream, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 24, 1980, Ser. No. 171,774
Int. Cl.³ E05C *3/12*
U.S. Cl. 292—201 **10 Claims**

1. An electro-mechanical latch assembly for a washing machine, said washing machine having a drum access lid and a latching hook connected to said lid, said latch comprising:

(a) a mounting bracket adapted for connection to the machine, said bracket including means defining a first fulcrum;

(b) electrical switch means mounted on said bracket;

(c) a switch lever pivotally mounted to said bracket and movable between a first and second position, said switch lever including,

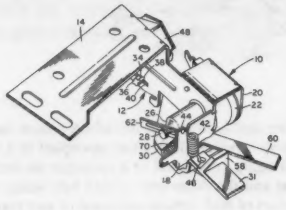
(i) a free end portion adapted for contact by said latching hook,

(ii) surface means engageable with said switch means to actuate said switch means between open and closed positions;

(d) means for biasing said switch lever to said first position;

(e) electrically operable solenoid means mounted on said bracket, said solenoid means including an armature movable between a first extended position and a second retracted position upon energization of said solenoid means;

(f) a locking lever pivotally mounted on said bracket means, said locking lever engageable with said first fulcrum, said



locking lever having a first portion thereof operably connected to said armature and another portion thereof engageable with said hook, said locking lever movable between a first position in which said hook end is spaced from said switch lever, a second position spaced from said switch lever and said first fulcrum, and a third position spaced closely adjacent said switch lever and in the path of movement of said lid hook;

(g) means for biasing said locking lever against said fulcrum surface means; and

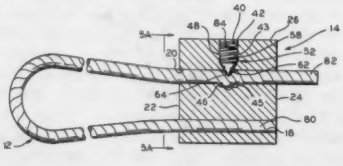
(h) said switch lever further including means defining a second fulcrum located adjacent said first portion and operable to prevent movement of said locking lever to said third position, said second fulcrum causing said locking lever to pivot thereabout when said switch lever is in said first position and said solenoid means is energized, thereby preventing said locking lever from aligning in the path of movement of said lid hook.

4,342,477

SECURITY SEAL WITH BREAK-OFF SCREW HEAD SECUREMENT

Kenneth R. McClure, St. Charles, Ill., assignor to Dickey Manufacturing Company, St. Charles, Ill.

Filed Feb. 25, 1980, Ser. No. 124,074
Int. Cl.³ B65D *33/34*
U.S. Cl. 292—307 R **6 Claims**



1. Security seal forming implements for providing a cable seal type security seal for padlock fashion locking and security sealing purposes,

said implements comprising:

a cable seal subcombination including:

a retainer body formed from a metallic material and defining oppositely directed end portions, and opposed edge portions on either side of said body extending between said end portions, respectively,

said body further defining an elongated substantially rectilinear passage adjacent one of said edge portions and extending from one of said body end portions in the direction of the other of said body end portion,

said body having a rectilinear bore formed therein extending from said one edge portion of said body and intersecting said passage substantially normally thereof and defining a mouth in said body at said one edge portion thereof and a recess in said body that is beyond said passage from said bore mouth,

said bore having an internally threaded portion between said mouth thereof and said passage and disposed adjacent said passage,

a length of cable anchored to said body at said body one end portion adjacent the other of said body edge portions,

said cable projecting from said body one end portion and having a free end proportioned lengthwise thereof to be inserted in said body passage from said body one end portion across and beyond said bore for shaping said cable shackle fashion in the body passage inserted relation of said cable free end,

and a one piece hand tool formed from tool steel for making said cable fast to said body at said bore and comprising:

a screw head having a threaded portion proportioned for threaded engagement with said bore threaded portion,

said screw head defining a protuberant working end for application against the cable when said cable free end thereof is in said body passage inserted relation thereof,

a handle including a shank portion that is integral with said screw head in aligned rectilinear relation and an elongated hand grip portion that is angularly disposed relative to said shank portion,

said screw head threaded portion lengthwise of said head having a length that is less than said bore threaded portion,

said tool shank portion having formed in juxtaposition to said head an annular groove thereabout,

said hand tool being hardened at said screw head and from said screw head into said shank portion including and across said groove whereby said groove forms a frangible connection between said screw head and said handle,

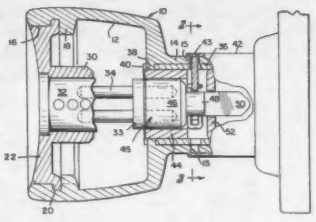
whereby when said cable is in its said body passage inserted relation thereof, said hand tool screw head may be threaded into said body bore threaded portion for making said cable fast to said body at said bore by hand gripping and moving said handle to rotate said screw head so as to make same fast within said body bore with said screw head protuberant end directed against said cable as needed to deflect said cable into said bore recess, and said hand tool handle may be separated from said head at said groove, by sidewise deflecting said handle relative to said shank portion to fracture said hand tool at said groove, and discarded, with said screw head remaining in said bore and defining a hardened jagged surfacing across the fracture that is recessed in said bore below said bore mouth whereby said screw head is resistant against being drilled out.

4,342,478

KNOB-CONNECTOR SPRING

William R. Foshee, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.

Filed Jun. 27, 1980, Ser. No. 163,472
Int. Cl.³ E05C *21/00*
U.S. Cl. 292—352 **16 Claims**



1. Knob-connector mechanism for connecting a doorknob on a tubular knob sleeve or the like, comprising

a knob-connector mounted for movement radially of the knob sleeve to a knob-connecting position,

and means for biasing the connector to such position,

characterized in that said biasing means comprises a wire spring having a central bight portion in outward radial thrust relation with said connector and disposed adjacent one side of the knob sleeve,

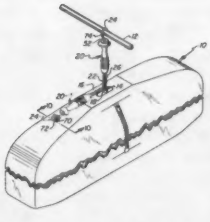
said spring also having side legs connected to said bight portion and extending therefrom in free-clearance relation across to the opposite side of the knob sleeve and there engaged in spaced lateral thrust relation with inside surfaces of the sleeve so that such lateral thrust of the spring legs reacts against such surfaces as cam surfaces to produce a component of force on the spring in the direction of outward radial movement of the connector.

4,342,479

HANGING IMPLEMENT FOR GARMENT BAGS

Wolfgang Hofer, 11 Soder Rd., North Caldwell, N.J. 07006

Filed Dec. 17, 1980, Ser. No. 217,212
Int. Cl.³ A45C *13/26*
U.S. Cl. 294—142 **14 Claims**



1. A hanging implement for a garment bag of the type which is adapted to be hung from one end thereof upon a support, the one end ordinarily being provided with means for attaching thereto a hanging device, said hanging implement comprising:

hook-shaped means for engagement with the support;

attachment means for attachment to the garment bag;

a handle having opposite ends and extending longitudinally between the hook-shaped means, located at one of the opposite ends, and the attachment means, located at the other of the opposite ends, the handle having a handgrip portion extending longitudinally between the hook-shaped means and the attachment means, and a flange portion between the handgrip portion and the hook-

shaped means, the flange portion extending laterally beyond the handgrip portion adjacent the hook-shaped means;

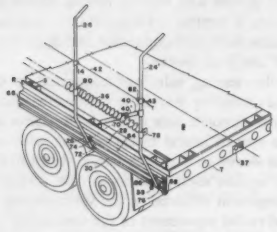
a stop shoulder extending generally laterally along the flange portion and confronting the handgrip portion for providing an abutment for a hand when the hand is placed upon the handgrip portion for lifting the garment bag in a longitudinal direction; and

a display surface extending generally longitudinally along the flange portion for displaying information capable of being viewed in general lateral directions when the garment bag is hung upon the support.

4,342,480
TARP ENCLOSURE FOR FLAT BED TRAILER AND TRUCK BODIES

Leonard W. Ross, Jr., 10902 Huntcliff Dr., Owings Mills, Md. 21117

Filed Aug. 26, 1980, Ser. No. 181,421
Int. Cl.³ B60P *7/02*
U.S. Cl. 296—100 **11 Claims**

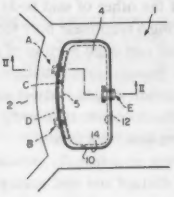


1. In a system for enclosing a trailer of the flat bed type and the like, with a canopy held by a plurality of arcuate members movably supported on over and under tracks fixed along each side of a trailer, said canopy pleated for folding upon retraction of the arcuate members toward a trailer headboard, the system having air powered means for actuating each of said arcuate members to move along said over-and-under tracks, on a respective roller engaging each of said over-and-under tracks, the improvement comprising in combination: means for preventing jamming of the rollers of respective arcuate members from misalignment of the over-and-under tracks relative to each other, comprising each of said respective arcuate members having: a substantially upright portion at each side and an inclined portion extending downwardly at an angle to each upright portion, said incline being in a fore-and-aft direction, said rollers being at said inclined portion, each of said over-and-under tracks having square-"C" shape in cross-section with the open portion of said square-"C" shape disposed outboard, a portion of each of said over-and-under tracks being between the rollers, the length of said incline being sufficient at least to increase the effective spacing of said rollers a distance preventing two-direction cramping of the rollers on said over-and-under track portion between the rollers, said air powered means comprising a respective tubular bellows extending rearwardly along the system on each side thereof, means attaching said tubular bellows to each of said respective arcuate members, means connecting said air powered means for inflating both said bellows together and extending said canopy to the rear and means for retracting said canopy including a winch for mounting at the front of a trailer, and a respective line extending rearwardly from the winch along each side of the system to connection with the rearmost arcuate member.

4,342,481
REMOVABLE ROOF EQUIPPED WITH A WIND DEFLECTOR PLATE

Noboru Kanou, and Keiji Mori, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of, Japan

Filed Jul. 30, 1980, Ser. No. 173,607
Claims priority, application Japan, Aug. 16, 1979, 54-103524
Int. Cl.³ B60J *7/18*
U.S. Cl. 296—217 **18 Claims**



1. In a motor vehicle having a stationary roof which has a front end and a rear end and an opening intermediate the ends, the opening also having front and rear ends, and a removable roof having a contour shape which corresponds to that of the opening, said removable roof having a front end and a rear end, the invention comprising:

first releasable means for releasably securing the front end of said removable roof to the stationary roof;

second releasable means arranged on the stationary roof adjacent the location of the rear end of said removable roof for releasably securing the rear end of said removable roof to the stationary roof, said first releasable means comprising at least one tongue member affixed to the front end of said removable roof and extending substantially horizontally toward the front end of said stationary roof, at least one hollow case on the stationary roof in the vicinity of the front end of said removable roof and having therein an opening to receive the tongue member, and at least one link member pivotally connected to the stationary roof at a position beneath the front end of the removable roof and having a first end and a second end, the link member being rotatable between a substantially horizontal position and a standing position, said removable roof having a latch groove which is engageable with the first end of said link member when said link member is in said substantially horizontal position; and

an automatically standing wind deflector plate pivotally mounted on said stationary roof at a position beneath the front end of said removable roof and connected to said link member, said wind deflector plate being pivotally movable by the link member from a substantially horizontal position beneath said removable roof to a standing position wherein said wind deflector plate projects upwards from said stationary roof.

4,342,482
SLIDING SUNROOF WITH VENTILATOR

Joseph F. Koral, Sterling Heights; Karl S. Shargabian, Troy, and Ervin H. Strem, Jr., Utica, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1980, Ser. No. 200,924
Int. Cl.³ B60J *7/04*
U.S. Cl. 296—221 **4 Claims**

1. A vehicle body sunroof comprising:

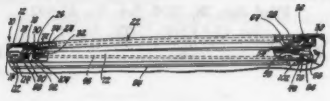
a roof panel having a roof opening;

a closure panel carrier frame adapted to sealingly mate with the roof panel and having a sunroof opening therein;

carriage means acting between the vehicle body and the carrier frame and adapted to move the carrier frame between a normal closed position sealingly mating with the roof panel to close the roof opening and an open position

in which the carrier frame is withdrawn from sealingly mating with the roof panel and stored longitudinally of the roof opening to open the roof opening;

a closure panel adapted to sealingly mate with the carrier frame to close the sunroof opening;



hinge means mounting the closure panel on the carrier frame for pivotal movement between a closed position sealingly mating with the carrier frame and a pivotally raised open position;

and means acting between the closure panel and the carrier frame to effect pivotal movement of the closure panel between open and closed positions.

4,342,483

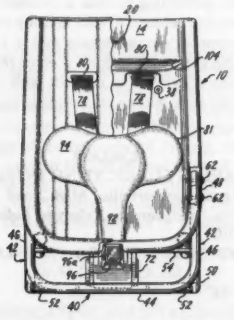
CHILD SAFETY SEAT FOR VEHICLES

Juichiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,468

Int. Cl.³ A47D *13/08;* B60N *1/12*

U.S. Cl. 297—488 **7 Claims**



1. A child safety seat for vehicles having a seat bottom, a seat back, a pair of shoulder restraint belts leading from laterally spaced-apart locations on the seat back above the locations of the shoulders of a seat occupant to a buckle tongue, and a buckle affixed to the front center portion of the seat bottom for receiving the tongue, characterized in that portions of the shoulder belts adapted to be disposed adjacent the abdomen of the seat occupant and a portion of the buckle tongue are embedded within and united to a generally T-shaped polymeric foam abdominal pad encased within a cover of durable sheet material wherein the foam pad is formed in situ within the cover with the belt portions and the tongue portion preinstalled within the cover prior to forming the foam, and including a relatively narrow lower portion adapted to be received between the occupant's legs and a relatively wider upper portion adapted to extend across the occupant's abdomen, the pad being adapted to cushion and protect the occupant's crotch and to cushion and spread belt loads over the occupant's abdomen, and which retains the parts of belts above the abdominal pad in laterally spaced-apart relation.

4,342,484

WELL STIMULATION FOR SOLUTION MINING

Donald H. Davidson, Bedford, and Ray V. Huff, Acton, both of Mass., assignors to Kennecott Corporation, New York, N.Y.

Division of Ser. No. 422,239, Dec. 6, 1973, Pat. No. 3,917,345. This application Aug. 14, 1975, Ser. No. 604,869

Int. Cl.³ E21B *43/26, 43/28*

U.S. Cl. 299—5 **12 Claims**

1. A method for increasing the permeability of a metal value containing subterranean igneous rock formation penetrated by at least one well which extends from the surface of the earth into the formation comprising the steps of injecting, at a pressure below the pressure producing new fractures in the formation, a hydraulic fluid through said well into the subterranean igneous rock formation at a pressure sufficient whereby said fluid diffuses into natural fractures in the igneous rock formation surrounding said well and causes said natural fractures in the igneous rock formation surrounding said well to increase in at least the cross-sectional area thereof; and, while maintaining said pressure, injecting as a second fluid a fluid, selected from the group consisting of a propping fluid and a propping fluid in combination with an acidic solution, an alkaline solution, oxidizing agents, and mixtures thereof wherein the injecting is into said natural fractures through said well whereby the use of said second fluid substantially results in maintaining the increased cross-sectional area of said natural fractures after the pressure is reduced.

4,342,485

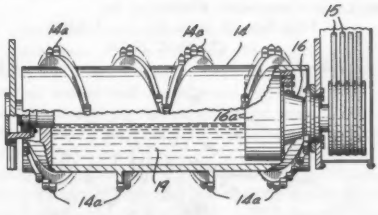
COLD SURFACE PLANER COOLING APPARATUS

Eskil Tuneblom, Mount Arlington, N.J., assignor to Dynapac Maskin AB, Solna, Sweden

Filed Aug. 29, 1980, Ser. No. 182,430

Int. Cl.³ E01C *23/09*

U.S. Cl. 299—39 **3 Claims**



1. In a cold surface pavement planer having a moveable chassis supporting a rotatable cutter drum, a gear box for driving said drum having a gear box housing disposed in the drum, an engine mounted on the chassis, and a coupling between the engine and the gear box, the improvement comprising a liquid coolant in the cutter drum, wherein the gear box housing has an outside surface partially immersed in the coolant, so that heat generated by power losses in the gear box is transmitted from said outside surface of said gear box housing to the drum surface by the coolant in the drum.

4,342,486

CUTTER BIT HOLDER

Michael L. O'Neill, Lucinda, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Sep. 19, 1980, Ser. No. 188,969

Int. Cl.³ E21C *35/18*

U.S. Cl. 299—86 **20 Claims**

1. A mining machine assembly comprising

bit support means,

a primary cutter bit secured to said bit support means,

a secondary cutter bit secured to said bit support means,

said primary cutter bit and said secondary cutter bit so posi-

tioned as to travel in substantially the same orbital cutting path upon movement of said bit support means,

said primary cutter bit projecting outwardly farther than said secondary bit, and

said primary bit being disposed closer to the leading portion

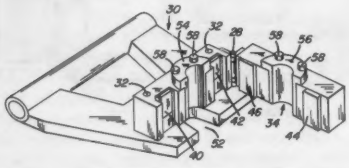
of said bit support means than to said secondary bit, whereby as between said primary cutter bit and said secondary cutter bit said primary cutter bit will do substantially all of the cutting until such time as through wear or other means said secondary cutter bit will project outwardly farther than said primary cutter bit.

4,342,487

AUTOMATIC ROOF BOLTING DRILL RETENTION APPARATUS

J. Alan Fowler, Monroeville Borough; George S. Haller, North Huntingdon Township, Westmoreland County, and C. David Rogers, Monroeville Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 29, 1980, Ser. No. 126,059
Int. Cl.³ F16C *29/10*
U.S. Cl. 308—3.9 **4 Claims**



1. Drill steel guide apparatus for selectively retaining and guiding a drill steel of a drilling machine during collaring in a rock face, said guide apparatus comprising:

a housing for guiding said drill steel including a first portion attached to said drilling machine and a second portion pivotally mounted on said first portion to move said second portion in one direction toward said first portion for guidingly engaging said drill steel and in a second direction away from said first portion for releasing said drill steel from said housing,

magnet means operable between said first and second housing portions to retain said portions together when said second portion is in its drill steel-engaging position with respect to said first portion,

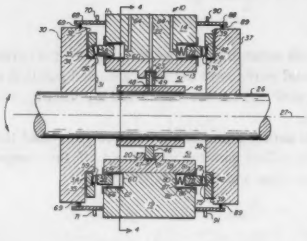
said magnet means providing a holding force of at least five pounds effective to retain said first and second housing portions together until vibrations produced by collaring of said drill steel are sufficient to break said holding force and release said housing portions from engagement with said drill steel.

4,342,488

SELF-ALIGNING ROLLING CONTACT THRUST BEARING/VIBRATION REDUCER ELEMENT

Hugh G. Anderson, Severna Park, and Philip J. Hatchard, Annapolis, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 28, 1979, Ser. No. 52,892
Int. Cl.³ F16C *17/06, 19/34*
U.S. Cl. 308—15 **12 Claims**



1. A self-aligning thrust bearing assembly for a rotating shaft comprising:

a journal bearing supporting the shaft;

a housing having a longitudinal axis, said housing being radially spaced from said journal bearing and defining a clearance space therebetween, said housing being fixed to prevent rotational and pivotal displacements of said housing;

means pivotally connecting said housing to said journal bearing for permitting pivotal movement of the shaft and journal bearing relative to said housing axis, said pivoting means comprising ridge means and a rigid rib element cooperating therewith to form a pivot therebetween; and

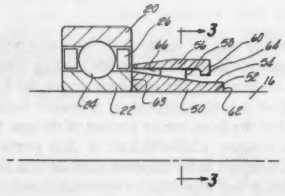
bearing means positioned in contact with said housing and the shaft for transmitting thrust loads therebetween.

4,342,489

BEARING LUBRICATING INJECTOR

Herman N. Lenz, Lambertville, Mich., and David A. Host, Phoenix, Ariz., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 7, 1980, Ser. No. 194,937
Int. Cl.³ F16C *33/66*
U.S. Cl. 308—187 **8 Claims**



1. A bearing lubrication injector for use in an engine having a housing, a shaft, a ball bearing including an inner race and an outer race for rotatably mounting the shaft in said housing, and a source of lubricant for said bearing, said injector comprising:

a first ring member having a substantially annular cross section coaxially secured to the shaft adjacent the inner race of the bearing, said ring member having an outer ramp surface which increases in diameter toward a first axial end of said first ring member adjacent the inner race;

a second ring member having a substantially annular cross section;

means for coaxially securing said second ring member to said first ring member such that the radially inner surface of said second ring member is radially spaced apart from said ramp surface to thereby define fluid passage means for axially transferring fluid between said radially inner surface and said ramp surface, said passage means having an inlet axially spaced from said inner race and in fluid communication with said source of lubricant; and

whereby upon rotation of said shaft, lubricant is centrifugally forced along said ramp surface and axially ejected from between said radially inner surface and said ramp surface into said bearing.

4,342,490

BEARING ASSEMBLIES

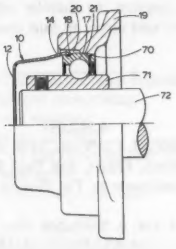
George Swinley, Castleford, England, assignor to Ransome Hoffmann Pollard Limited, Chelmsford, England

Filed Jul. 2, 1980, Ser. No. 164,536

Claims priority, application United Kingdom, Jul. 3, 1979, 7923054; Mar. 4, 1980, 8007379

Int. Cl.³ F16C *33/76*

U.S. Cl. 308—187.1 **15 Claims**



1. In a bearing assembly composed of inner and outer races with rolling elements therebetween in combination with a cover; the improvement comprising a reception groove provided in one of the bearing races and the cover is in the form of a resilient hollow cap provided with projections disposed at the peripheral edge of the open end of the cap, the projections extending axially beyond the peripheral edge of the open end of the cap and having lips which positively engage in the bearing race reception groove, the cap being removable from and attachable to said one bearing race by resilient deformation of the cap.

4,342,491

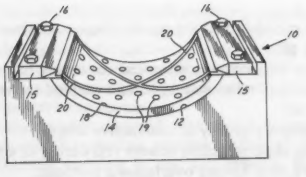
SELF-LUBRICATING JOURNAL BEARING

Warren E. Jamison, Evergreen, and Raymond C. Pennington, Denver, both of Colo., assignors to Projected Lubricants, Inc., Denver, Colo.

Filed Mar. 24, 1980, Ser. No. 133,515

Int. Cl.³ F16C *33/00, 1/24, 33/66*

U.S. Cl. 308—239 **3 Claims**



1. In a journal bearing subjectable to severe conditions, an arcuate bearing plate having a concave bearing surface, a plurality of apertures opening into said surface, a plug of lubricant containing material comprising an oil and a polymer composition inserted into each of said apertures and adapted to engage a rotating journal supported on said bearing surface for providing lubrication between said journal and said bearing plate, and coolant grooves cut into and extending substantially entirely across the bearing surface of said bearing plate for channeling a liquid coolant other than said lubricant containing material between the journal and the bearing plate.

4,342,492

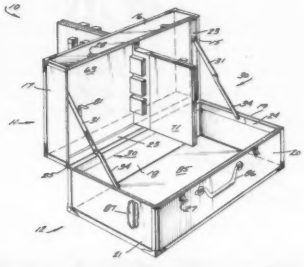
PORTABLE ARTICLE SUPPORTING CONTAINER

Steven T. Spevak, Derwood, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Continuation-in-part of Ser. No. 38,719, May 14, 1979, Pat. No. 4,286,832, which is a continuation-in-part of Ser. No. 907,321, May 18, 1978, Pat. No. 4,170,392. This application Feb. 4, 1980, Ser. No. 118,633

Int. Cl.³ A47B *97/00, 81/00*

U.S. Cl. 312—244 **19 Claims**



1. A portable article supporting container comprising

a first container portion including first, second, third and fourth walls, said first wall being opposite said third wall and said second wall opposite said first wall;

a second container portion including first, second, third and fourth walls corresponding to said first container portion walls;

means for pivotally mounting said first and second container portions together along said first walls for movement from a first position wherein said first, second, third and fourth walls of each respective container portion are substantially coplanar with the respective corresponding walls of the other container portion, to a second position wherein said first, second, third and fourth walls of each respective container portion are substantially perpendicular to the respective corresponding walls of the other container portion;

first latch means for latching said container portions in said first position;

second latch means for latching said container portions in said second position;

a pair of article supporting plates accessible from the exterior of said first container portion;

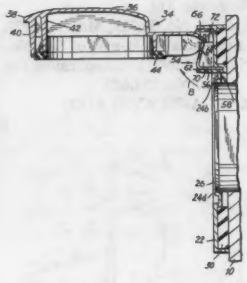
means for operatively pivotally connecting said article supporting plates to said first container portion so that access to said plates is provided from the exterior of said first container portion when in said first position with respect to said second container portion so that said plates may be pivotally moved about an axis passing through two opposite walls of said first container portion, from a first position substantially within the volume defined by said first container portion first, second, third and fourth walls, to a second position wherein said plates extend outwardly from said volume.

4,342,493

WEATHER-RESISTANT ARRANGEMENT FOR OUTDOOR ELECTRICAL DEVICES

David Grenell, Laurelton, N.Y., assignor to Allen-Stevens Corp., New York, N.Y.

Continuation-in-part of Ser. No. 970,866, Dec. 18, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 198,811
Int. Cl.³ H01R *13/46*
U.S. Cl. 339—44 M 14 Claims



1. A weather-resistant arrangement for protecting an outdoor electrical receptacle having an electrical device thereon from the deleterious effects of weather conditions, such as moisture, snow, rain, and like environmental conditions, comprising:

(a) a receptacle plate for mounting in sealing engagement with an outdoor support structure on which the receptacle to be protected is supported,

(i) said plate having wall portions bounding an opening at which the device is located, and through which access to the device is established;

(b) a protective cover pivotally mounted on said plate for turning movement about a turning axis and along a generally circular path, said cover being manually movable from an end-limiting fully closed position, in which said cover overlies said opening and bars access to the device, to an end-limiting fully open position, in which said cover extends at an angle relative to the plane of said opening and permits access to the device;

(c) waterproofing means mounted on said cover for movement together with the same,

(i) said waterproofing means sealingly and water-tightly engaging said wall portions of said plate in said closed position to thereby prevent water from reaching the device and doing damage; and

(d) means for constantly and affirmatively urging said cover in all positions of the latter along said path towards said closed position to thereby automatically protect the device during non-use of the same, said urging means including

(i) biasing means in force-transmitting engagement with said plate and said cover, said biasing means constituting an energy-storing leaf spring having a captivated portion mounted on said plate, and a planar cantilever portion engaging said cover at a mutual contact zone, said cantilever portion being movable along said circular path between a first tensioned position, in which said cover is affirmatively maintained at said closed position thereof with a closure force of a predetermined magnitude, and a second tensioned position, in which said cover is affirmatively urged from said open to said closed position thereof with a closure force of a magnitude greater than said predetermined magnitude, said leaf spring constantly exerting a restoring force on said cover in all positions thereof, including the fully open position, for automatically returning said cover, upon manual release of the same in said fully open position, from said fully open to said fully closed position without mechanical interference and without manual assistance, and

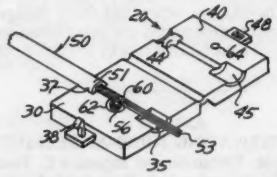
(ii) anti-over-the-center stop means in said path for preventing movement of said cover past said fully open position, and for concomitantly preventing said contact zone from being so positioned relative to said spring such that a restoring torque is constantly exerted by said spring on said cover, said stop means constituting a stop located in said circular path such that said contact zone is located substantially at or spaced upstream of an imaginary line which extends from the center of curvature of said circular path both in a radial direction towards, and at a right angle to, the plane of said planar cantilever portion, to thereby reliably and automatically return said cover to said closed position thereof.

4,342,494

ELECTRICAL CONNECTOR ASSEMBLY

Richard W. Normann, Otego, and Paul D. Niles, Bainbridge, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 4, 1980, Ser. No. 137,228
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—105 11 Claims



1. A method of making an electrical connector comprising the steps of:

forming an insulative electrical connector having a pair of mateable bodies and a channel adapted to receive a conductor;

arranging a plurality of conductive strands;

bending the conductive strands rearwardly of a forward end into a loop having overlapping portions;

securing the overlapping portions of the conductive strands together to prevent forces from disrupting the loop;

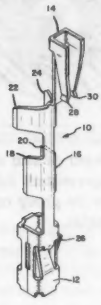
inserting the conductive strands provided with the loop into the channel of the connector body; and

securing the mateable connector bodies together to form a completed connector assembly.

4,342,495
DOUBLE ENTRY CRIMP TERMINAL

Benny M. Bennett; Timothy L. Kocher, both of Harrisburg, Pa., and David M. Little, Harrisonburg, Va., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 5, 1979, Ser. No. 54,723
Int. Cl.³ H01R *23/04*
U.S. Cl. 339—163 **10 Claims**

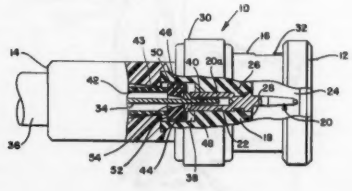


1. A double entry electrical terminal capable of being probed while in a mated condition comprising:
an elongated terminal member;
a mating receptacle on one end;
a probe receptacle on the opposite end; and
an intermediate crimp barrel.

4,342,496
CONTACT ASSEMBLY INCORPORATING RETAINING MEANS

Harold G. Hutter, Brookfield, and August B. Ramsland, New Fairfield, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 22, 1980, Ser. No. 152,218
Int. Cl.³ H01R *17/18*
U.S. Cl. 339—177 E **27 Claims**

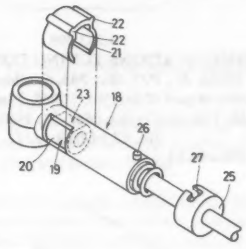


1. A connector for a cable having an inner element, comprising:
a support member having a cable-receiving opening at one end thereof for receiving said cable, without interruption, longitudinally into said cable-receiving opening, said support having therein a core including a passageway extending therethrough, said passageway communicating with said cable-receiving opening;
a terminating member disposed within said passageway in said core, said terminating member having an inner element-receiving opening at one end thereof, said inner element-receiving opening communicating with said cable-receiving opening; and
means for bitingly securing said inner element in electrically connected relationship within said inner element-receiving opening in said termination member, said securing means being adapted to freely admit said inner element into said inner element-receiving opening upon initial longitudinal insertion of said cable into said cable-receiving opening in said support member, said securing means being responsive solely to further longitudinal insertion of said cable alone into said cable-receiving opening to bitingly secure said inner element in electrical connected relationship within said inner element-receiving opening in said terminating member; and
means for retaining said cable in position in said connector.

4,342,497
BATTERY TERMINAL CONNECTOR

Charles A. Morrison, Roodepoort, South Africa, assignor to National Motor Spares Corporation, Miami, Fla.

Filed Feb. 22, 1980, Ser. No. 123,802
Claims priority, application South Africa, Sep. 7, 1979, 79/4739
Int. Cl.³ H01R *11/12, 13/52*
U.S. Cl. 339—228 **10 Claims**



1. A battery terminal connector comprising a body made of electrically insulating material and having a socket extending transversely into the body towards one end thereof and adapted, in use, to receive a battery terminal post and to cover the top and sides of the post, a passage extending through the body in a direction transverse to the socket and a conductive battery post engaging connector block axially movable within the passage so as to be co-operable with a battery terminal post received within the socket in use, the body having at least one removably covered aperture into said passage adapted to expose a part of a conductive surface associated with the battery terminal post while the connector is attached to such post, such exposed part being in a position such that an opposed part of the body can be engaged by a crocodile clamp so that at least one side of said clamp is held in firm engagement with the conductive part and is electrically connected to the battery terminal post.

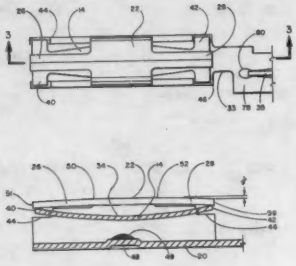
4,342,498
ELECTRICAL SOCKET

George A. Patton, Enka, and Richard C. Muehling, Asheville, both of N.C., assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 23,804, Mar. 26, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 180,720
Int. Cl.³ H01R *13/16*
U.S. Cl. 339—256 R **14 Claims**

1. An electrical socket comprising: an elongated metal housing being open at at least one end for receiving an electrical pin; one side of said housing having a beam projecting therefrom;
said beam forming an incline with respect to the longitudinal axis of said socket such that said beam is slightly bent inwardly so that the free end of said beam is closer to the longitudinal axis of the housing than its fixed end when the electrical pin is not received in the socket;
an elongated spring member being received in said housing;

said spring member being in contact with said free end of said beam;



said beam being compressed outwardly upon the insertion of a pin contact into said socket.

4,342,499

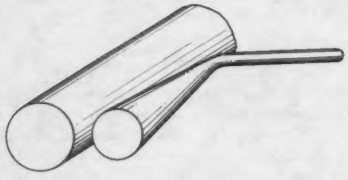
COMMUNICATIONS TUNING CONSTRUCTION

John W. Hicks, Jr., P.O. Box 345, Southbridge, Mass. 01550

Continuation-in-part of Ser. No. 21,868, Mar. 19, 1979, Pat. No. 4,315,666. This application Mar. 31, 1980, Ser. No. 135,798

Int. Cl.³ G02B *5/172*

U.S. Cl. 350—96.15 **39 Claims**



1. A wave length selective energy transfer device comprising first and second elongated wave guide structures of different physical characteristics to produce a different dispersion in each said structure, said first wave guide structure supporting at least two wave lengths in only a single energy mode whose phase velocity has a certain wave length dependence and said second wave guide structure supporting an energy mode whose phase velocity has a substantially different wave length dependence, said phase velocity of said single energy mode supported by said first wave guide structure being equal to said phase velocity of said energy mode supported by said second wave guide structure at a certain wave length, but with substantially different dispersions of said two propagated energy modes, and also providing coupling between said wave guide structures for a portion of their lengths.

4,342,500

HIGH VOLTAGE STABILE OPTICAL CABLE STRUCTURES

Ulrich Oestreich, Munich, and Guenter Zeidler, Unterpfaffenhofen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 10, 1979, Ser. No. 65,602

Int. Cl.³ G02B *5/16*

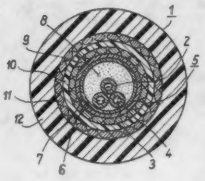
U.S. Cl. 350—96.23 **8 Claims**

1. An optical cable structure for use in high-voltage environments, comprising:

a metal-free cable core containing optical transmission elements;

a multi-layer sheath encasing said cable core and having an exterior layer;

a plasticized cross-linked synthetic material selected from the group consisting of a polyurethane resin, an epoxy resin and a polyester resin in all hollow spaces within said cable core and within said sheath; and



at least said exterior layer of said multi-layer sheath being composed of a creep-resistant material based on a compound selected from the group consisting of a polyolefin and a polyester material.

4,342,501

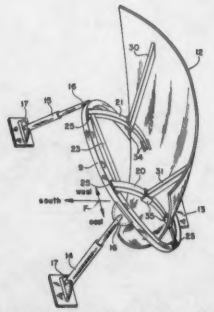
RADIANT ENERGY COLLECTOR WITH FOCAL POINT BETWEEN THE PLANE OF THE FRAME AND EARTH

Murray Solomon, II, Vineyard Rd., Newton, Mass. 02159, assignor to Murray Solomon, Newton, Mass.

Filed Jul. 25, 1980, Ser. No. 172,470

Int. Cl.³ G02B *5/10, 7/18*

U.S. Cl. 350—296 **3 Claims**



1. A radiant energy concentrator comprising:

a radiation reflector (12) whose reflecting surface is a portion of a conic of revolution;

a circular frame (9) inclined at an angle to the surface of the earth;

means for mounting said reflector on said frame such that the focal point of said reflector is located along the axis of symmetry of said frame at a point between the plane of said frame and the earth;

said mounting means including a plularity of parallel, curved tracks (20,21), each of which is a portion of a circle that intersects said circular frame (9);

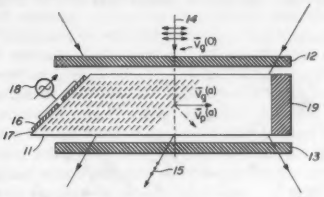
means (30,31,34,35) for slidably mounting said reflector (12) on said tracks (20,21);

and means (25) for rotating said tracks (20,21) about said frame (9).

4,342,502
TRANSVERSE TUNABLE ACOUSTO-OPTIC FILTER

I-Cheng Chang, Sunnyvale, Calif., assignor to Itek Corporation, Lexington, Mass.

Filed Jun. 12, 1980, Ser. No. 158,662
Int. Cl.³ G02F 1/33
U.S. Cl. 350—358 5 Claims

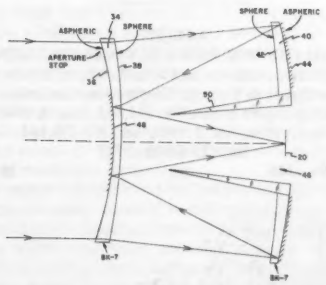


1. Apparatus for diffracting light from a first polarization to a second polarization, said apparatus comprising an acoustically anisotropic, optically birefringent crystal, means for exciting an acoustic wave in the said crystal, means for passing a light beam through the said crystal along a selected axis oriented at a non-zero angle with the optic axis of said crystal, and means for directing the acoustic wave and light in said crystal such that the group velocity of the acoustic wave is substantially perpendicular to the said axis of said light beam in said crystal, said axis of said light beam being selected such that the tangents to the locus of the wavevectors for the incident light and diffracted light are substantially parallel.

4,342,503
CATADIOPTRIC TELESCOPES

David R. Shafer, Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 9, 1979, Ser. No. 82,699
Int. Cl.³ G02B 17/08
U.S. Cl. 350—443 9 Claims



1. A two-element catadioptric telescope consisting of:

(A) a first element comprising a transmissive shell

(a) the front surface thereof being concave toward the front,

(b) the back surface thereof also being concave toward the front,

(c) said front and back surfaces being aspheric and spherical, respectively,

(d) the central portion of one of said surfaces being mirrored to form the secondary mirror of the telescope; and,

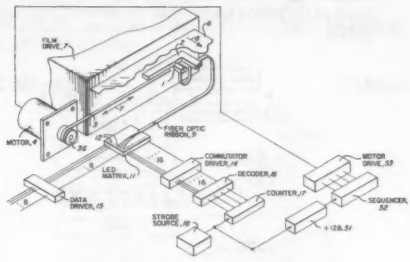
(B) a second element located behind said shell

(a) a surface of said second element being concave toward the front, and mirrored to form the primary mirror of the system.

4,342,504
LED-FIBER OPTIC CHARACTER PRINTER

Peter R. Ebner, Milford, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Aug. 25, 1980, Ser. No. 181,312
Int. Cl.³ B41B 19/00
U.S. Cl. 354—7 23 Claims



1. A system for recording indicia upon a photosensitive medium comprising:

a. an array of light emitting elements;

b. digital electronic control means for causing said light emitting elements to be selectively illuminated by the application of electrical pulses thereto;

c. a print head;

d. a print head transport carriage coupled to said print head;

e. belt drive means including a belt having first and second terminal portions coupled to said print head carriage for driving said carriage in a first direction, said belt further including a first aperture formed within said first terminal portion of said belt and a second aperture formed within said second terminal portion of said belt, together with belt to carriage coupling means coupled to said print head carriage and positioned within said first and second apertures of said belt to provide for angular displacement of said first terminal portion of said belt relative to said second portion of said belt;

f. means for causing said film to be transported in a second direction transverse to said first direction after said print head scans said film in said first direction;

g. a flexible loop of light conducting elements;

h. means for coupling the input ends of said light conducting elements to associated light emitting elements of said array of light emitting elements, and

j. means for coupling the output ends of said light conductive elements to said print head.

4,342,505
AUTOMATIC EXPOSURE CONTROL DEVICE FOR A SINGLE LENS REFLEX CAMERA

Saburo Numata, and Shinichiro Fujino, both of Urawa, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Continuation-in-part of Ser. No. 850,454, Nov. 10, 1977, abandoned, which is a continuation-in-part of Ser. No. 675,249, Apr. 9, 1976, abandoned. This application Jul. 30, 1979, Ser. No. 61,855
Claims priority, application Japan, Apr. 9, 1975, 50-42968
Int. Cl.³ G03B 7/093, 17/38
U.S. Cl. 354—23 D 3 Claims

1. An automatic exposure control device for a single lens reflex camera wherein various exposure factors are treated in the form of digital value and the measured scene brightness is compared with the number of clock pulses counted in the camera for controlling the exposure time wherein the improvement comprising:

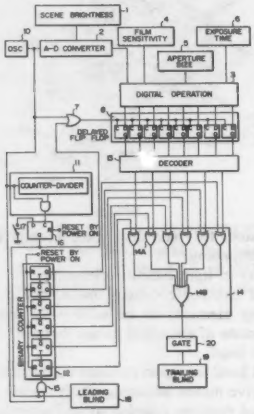
an oscillator for generating clock pulses of constant frequency,

a normally turned off gate connected with said oscillator,

a clock pulse counter connected with the gate for counting the clock pulses when the gate is turned on, said clock pulse counter being connected with a trailing blind control means which is connected with a memory means wherein the scene brightness is memorized,

a sampling circuit connected with said oscillator for dividing the pulses generated therefrom to provide sampling pulses,

a shutter release means for generating a signal having a high level of the period longer than the period of said sampling pulses,



a gate means having a function of an AND circuit connected with said sampling circuit and said shutter release means for giving an output of high level when said gate means receives said sampling pulses together with said shutter release signal, and

a leading blind control means for starting a leading shutter blind upon receipt of a signal,

said normally turned off gate being connected with said gate means so as to be turned on upon receipt of a signal of high level therefrom, and said leading blind control means being connected with said gate means,

whereby said normally turned off gate is turned on simultaneously with the start of the leading blind.

4,342,506

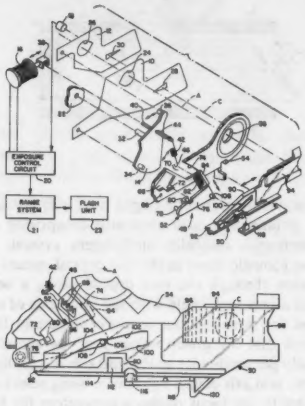
EXPOSURE TRIM MECHANISM FOR CAMERAS

Bruce K. Johnson, Andover, and Kenneth P. Black, South Weymouth, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 20, 1981, Ser. No. 236,339
Int. Cl.³ G03B *7/14*
U.S. Cl. 354—27 **6 Claims**

1. A trim mechanism for an automatic exposure control system usable in a photographic camera and having a scanning shutter blade mechanism movable between closed and open conditions and defining progressively increasing aperture values as they move toward their fully open position, selectively energizable means for moving said shutter blade mechanism to said closed condition, bias means acting in opposition to said selectively energizable means for advancing said shutter blade mechanism from said closed condition toward said open condition when said selectively energizable means is de-energized, said bias means being a shutter spring having one end connected to said blade mechanism, selectively operable means for illuminating the scene with a pulse of illumination in timed relation to said blade movement so as to produce said pulse in relation to a blade aperture selected in accordance with subject distance, light-responsive means for controlling operation of said selectively energized means between energized and de-energized states, and mounting means to support said exposure control system, said trim mechanism comprising:

a trim slide having a variable density light filter coupled thereto, said trim slide being movably adjustable to shift said filter in relation to said light-responsive means and thus regulate the intensity of light passing to said light regulating means, means connecting said bias means and said trim slide for varying the force of said bias means to directly vary the rate at which said shutter blades are



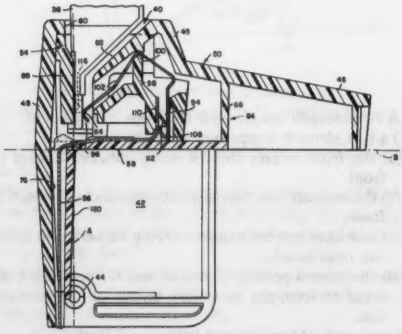
advanced toward said open condition, said trim slide comprising a cam mounted on said trim slide and a cam follower engaged by said cam and connected to the other end of said shutter spring, said cam defining a pair of ramp surfaces with a dwell surface interposed therebetween, and said trim mechanism additionally including spring detent means for locating said trim slide in a position such that said cam follower is in engagement with said dwell surface and for retaining said trim slide on said mounting means.

4,342,507

FLASH HOLDER ASSEMBLY ARRANGEMENT

Bruce K. Johnson, Andover, and John B. Morse, Boston, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 175,422, Aug. 5, 1980. This application Jun. 3, 1981, Ser. No. 270,144
Int. Cl.³ G03B *15/03*
U.S. Cl. 354—143 **24 Claims**



1. A flash socket assembly comprising:

a plurality of generally U-shaped electrical contacts each

having first and second end portions, each of said second end portions of said electrical contacts including an inclined tab;

a flexible cable; and

a contact retainer of unitary molded construction having an opening therein for receiving at least the contact blade portion of a flash array, said retainer having a support surface positioned to support one side of the contact blade when the contact blade is operatively positioned within said opening, and means for effecting electrical contact between said second end portions of said U-shaped electrical contacts and a first end of said flexible cable, said electrical contact effecting means including a first internal surface of said retainer against which said second end portions of said U-shaped electrical contacts are seated and a second internal surface of said retainer disposed in facing relation to said first internal surface thereof and against which said first end of said flexible cable is resiliently engaged by said inclined tabs.

4,342,508

MIRROR OPERATING MECHANISM IN SINGLE-LENS REFLEX CAMERA

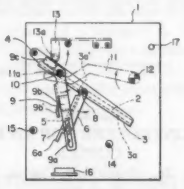
Keisuke Haraguchi, Ranzan, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 300,866

Claims priority, application Japan, Sep. 10, 1980, 55/128629[U]

Int. Cl.³ G03B *19/12*

U.S. Cl. 354—152 **7 Claims**



1. In a single lens reflex camera of the type having a mirror box body, a half-mirror in said mirror box body for receiving an incoming image beam and separating said image beam into a reflected beam and a transmitted beam, said first mirror being movable between an observation position in the optical path of said incoming image beam and a photographing position out of the optical path of said incoming image beam, and a total reflection mirror for reflecting said transmitted beam, a mirror operating mechanism comprising:

a first mirror holding frame for holding said half-mirror and being pivotably mounted to said mirror box body;

a second mirror holding frame for holding said total reflection mirror and being pivotably mounted to said first mirror holding frame, said second mirror holding frame being pivotable with respect to said first mirror holding frame between an observation position and a photographing position;

a second mirror operating lever pivotably mounted via a pivot shaft to said first mirror holding frame, said second mirror operating lever being coupled on one side of said pivot shaft to said second mirror holding frame and having an abutment portion on the other side of said pivot shaft; and

a rotation angle limiting means mounted on said mirror box body for engaging said abutment portion as said first mirror is moved toward its photographing position;

whereby said second mirror operating lever is rotated relative to said first mirror holding frame via pressure on said abutment portion by said rotation angle limiting means as said first mirror is moved toward its photographing position, thereby rotating said second mirror holding frame toward said first mirror holding frame and toward its photographing position.

4,342,509

FILM FEEDING DEVICE OF A CAMERA

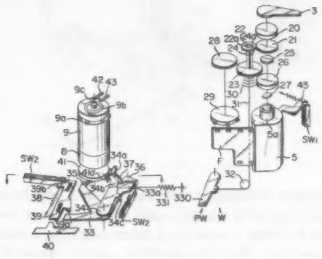
Hiroshi Wakabayashi, Yokohama, and Takeshi Okuyama, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 9, 1980, Ser. No. 195,431

Claims priority, application Japan, Oct. 13, 1979, 54-132171; Oct. 13, 1979, 54-132174

Int. Cl.³ G03B *1/12*

U.S. Cl. 354—173 **8 Claims**



1. In a film feeding device for a camera including a preparatory wind-up device for winding up on a supply spool, before exposure, a roll film in a film magazine loaded into the camera, and a second wind-up device for rewinding into said magazine the film wound on said supply spool, said second wind-up device being capable of controlling the frame by frame movement of said film in cooperation with an operation for effecting exposure of said film by a shutter device, the improvement comprising:

(a) means for detecting the completion of the wind-up, by said preparatory wind-up device, of all of the film which is drawn out of said film magazine and can be wound up on said supply spool; and

(b) change-over means for blocking and releasing the operation of said shutter device, said change-over means being operatively associated with said detecting means to block said operation before said detecting means detects the completion of the wind-up of said film and to release said blocking when said detecting means has detected said completion, said shutter device including an electromagnet energized to effect said operation for exposure, a circuit for supplying the energy to said electromagnet, and switch means for controlling said circuit, said switch means being operated in response to said detecting means.

4,342,510

APPARATUS FOR MAKING PHOTOGRAPHIC PICTURES

Emile A. H. Guillaume, Ballaigues, Switzerland, assignor to Zelacolor Systems Establishment, Vaduz, Liechtenstein

Continuation of Ser. No. 25,946, Apr. 2, 1979, Pat. No. 4,272,172. This application Oct. 31, 1980, Ser. No. 202,565

Claims priority, application Switzerland, Apr. 7, 1978, 3749/78

Int. Cl.³ G03B *1/00, 17/26*

U.S. Cl. 354—216 **5 Claims**

1. Apparatus for making a photographic picture on a film which is exposable in a film plane, said apparatus comprising:

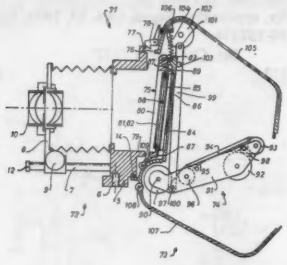
a first housing; an objective in said first housing; an optical pathway through said first housing and through said objective thereof;

a second housing, separably attached to and separable from

said first housing, said film plane being in said second housing;

said second housing including mask positioning means for positioning a mask generally in said film plane for intercepting light from said objective; said second housing including shutter means positioned between said mask positioning means and said objective;

means for automatically opening said shutter means when



said second housing is attached to said first housing and for automatically closing said shutter means when said second housing is separated from said first housing; and

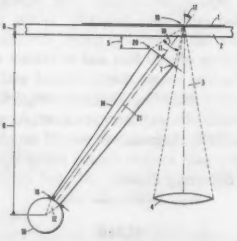
a photographic film transporting device located in said second housing on the side of said mask positioning means away from said objective and including means for moving said photographic film between a first position generally at said film plane and a second position away from said film plane.

4,342,511

ILLUMINATION SYSTEM HAVING AN EFFICIENT LIGHT GUIDE

Wilson M. Routt, Jr., Lexington, Ky., and Danny A. VanHook, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 20, 1980, Ser. No. 179,852
Int. Cl.³ G03B 27/00
U.S. Cl. 355—1 **3 Claims**



1. An illumination apparatus for a document scanner comprising:

a fluorescent lamp for illuminating a document to be scanned, said lamp having an aperture defined by an aperture angle and a radiance determined by said aperture angle; and

light conducting means, having a trapezoidal longitudinal cross section, for guiding light therethrough by way of substantial total internal reflection and through said aperture to an area of said document, the narrow base of said trapezoidal shape positioned adjacent said aperture and an output window associated with the wide base of the trapezoidal shape directed towards the document area to be scanned wherein said wide base is at a scan distance from a point in said area so that said point forms a subtended solid angle with said output window,

wherein the width of said wide base is increased to correspondingly increase said solid angle,

wherein said light conducting means includes an illumination axis forming a guide angle with the document plane normal at a point of intersection with said document,

wherein a set of design parameters including said guide angle, said scan distance, said narrow base, said wide base, and the length of said light conducting means are selected so as to maximize the product of the lamp radiance and said solid angle,

wherein the design parameter selection is performed so as to maximize the total irradiance function $H(\bar{p})$,

wherein the function $H(\bar{p})$ is an integral equation of the form

$$H(\bar{p}) = \frac{\pi B(W2)\, D^2}{2} \int_{-W1}^{W1} \frac{T(y)\,(y \sin\phi - \cos\phi)\, dy}{(y^2 + D^2)^{3/2}}$$

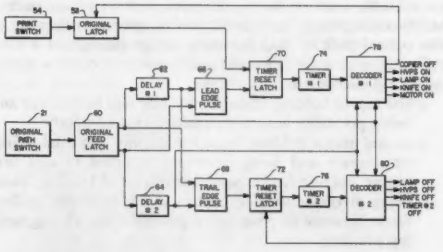
and wherein B(W2) is the fluorescent lamp radiance as a function of W2, W2 is the width of said narrow base, D is the scan distance, W1 is the width of said wide base, T(y) is the total transmitted fraction of a light ray along a light path from said document area to said lamp aperture traversing said light conducting means, y is an intercept above the illumination axis upon which a light ray strikes said output window of said light conducting means, ϕ is the guide angle, and π is the constant 3.1415 . . . , whereby the amount of light delivered to said area is maximized.

4,342,512

COPY CYCLE CONTROLLER FOR AN ELECTROSTATIC COPIER

Robert J. Tolmie, Jr., Brookfield Center, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 17, 1980, Ser. No. 207,175
Int. Cl.³ G03G 15/00
U.S. Cl. 355—14 SH **5 Claims**



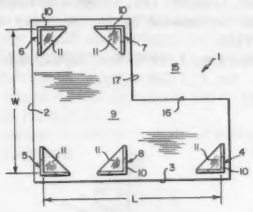
1. A dual timing system for the sequential control of a copier operative to produce copies of originals, comprising:

a print switch operative to start the copier, a switch located on the path along which the originals are conveyed, a first timer for starting the sequence of operation of the components of the copier, said first member being enabled when said path switch senses the leading edge of an original, a second timer for terminating the operation of components of the copier, said second timer being enabled by the trailing edge of an original being sensed by the path switch.

4,342,513
EASEL BOARD USED IN PHOTOGRAPHIC PRINTING

Frankie U. Gibbs, 64 Division Ave., Blue Point, N.Y. 11715

Filed Mar. 10, 1980, Ser. No. 128,397
Int. Cl.[3] G03B 27/58
U.S. Cl. 355—74 11 Claims

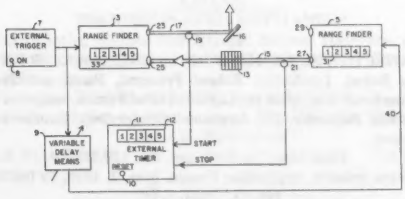


1. A rectangular shaped easel board for use with a sheet of photo paper having a longitudinal length L and a lateral width W, said board having a longitudinal length greater than L and a lateral width greater than W and including a cut out in one corner thereof equal to substantially one-half the longitudinal length of the board times substantially one-half the lateral width of the board and having on a front side of the board at least two front side sheet positioning means situated at two of the uncut corners of the board and adjacent either the lateral edge of the board or the longitudinal edge of the board and when adjacent the lateral edge of the board separated a distance W from one another and when adjacent the longitudinal edge of the board separated a distance L from one another whereby a corner of the sheet having a dimension substantially one-half W times substantially one-half L may be exposed when said sheet is positioned on the front side of said board by said front side sheet positioning means.

4,342,514
MEANS AND METHOD FOR TESTING LASER RANGE FINDERS

Paul B. Mathews, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 11, 1980, Ser. No. 177,032
Int. Cl.[3] G01C 3/08
U.S. Cl. 356—5 4 Claims

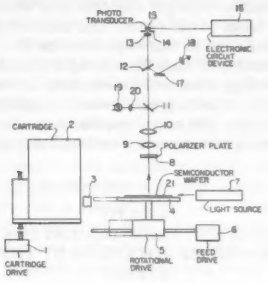


4. Apparatus for testing the accuracy and sensitivity of a first laser range finder, comprising, means for directing a transmitted beam of a second range finder into a receiver of said first range finder, an optical filter arranged in the path of said transmitted beam of such opacity that the beam entering said receiver will be just strong enough to operate the circuitry of a receiver having minimum acceptable sensitivity, an external trigger circuit connected to a trigger input of said first range finder and to a variable delay means, the output of said variable delay means connected to a trigger input of said second range finder, whereby said range finders may be sequentially triggered with different time delays between the sequential triggering, and an external timer arranged to be started in response to a transmitted beam of said first range finder and stopped in response to the transmitted beam of said second range finder.

4,342,515
METHOD OF INSPECTING THE SURFACE OF AN OBJECT AND APPARATUS THEREFOR

Masakuni Akiba, Tokorozawa; Hiroto Nagatomo, Tokyo, and Jun Suzuki, Higashimurayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1979, Ser. No. 5,924
Claims priority, application Japan, Jan. 27, 1978, 53-7277; Jan. 12, 1979, 54-1356
Int. Cl.[3] G01M 21/32
U.S. Cl. 356—237 6 Claims



1. Inspection apparatus for detecting foreign matter existent on a surface of an object, comprising:

light emission means for projecting light towards the object to-be-inspected sidewards of said object;

first polarization means for polarizing light reflected from the surface of said object to-be-inspected;

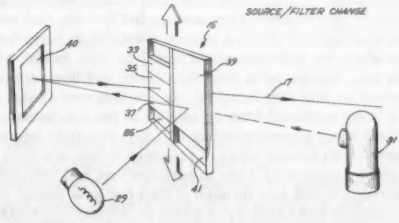
detection means for detecting the reflected light obtained after the passage through said polarization means; and

wherein said light emission means includes means for projecting light from at least two different sides of said object to-be-inspected.

4,342,516
FILTER INDEXING FOR SPECTROPHOTOMETER SYSTEM

Morteza M. Chamran, Elmhurst, Ill.; Larkin B. Scott, Fort Worth, Tex., and Paul B. Williams, Lombard, Ill., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 7, 1980, Ser. No. 128,030
Int. Cl.[3] G01J 3/12, 3/18
U.S. Cl. 356—332 8 Claims



1. A spectrophotometer system comprising a first radiant energy source and a second radiant energy source for generating a beam of radiant energy, an optical system for transmitting the beam of radiant energy at preselected wavelengths through

a sample cell and onto a detector, the combination further comprising:

a filter tray movably mounted for movement along a path, said filter tray including control means for selecting the source of radiant energy to be transmitted depending on the position occupied by said tray;

a plurality of filters positioned in said tray for movement through the beam of radiant energy as said filter tray is moved along said path, said filters being positioned on said tray for independent presentation in said beam;

stepper means for indexing said tray in discrete steps along said path and

microcomputer means for controlling said optical system for successively changing the wavelength of the beam of radiant energy over a predetermined spectral range, and said microcomputer means including means for selecting any limited wavelength range to scan within the larger spectral range of the system, said microcomputer means being connected to said stepper means for indexing said tray a plurality of steps for moving a select filter into the radiant energy beam and for selecting the source of radiant energy at only predetermined wavelengths of said spectral range, said microcomputer means being caused to discontinue changing said wavelength during indexing of said tray.

4,342,517

METHOD AND ARRANGEMENT FOR THE MEASUREMENT OF ROTATIONS BY THE SAGNAC EFFECT

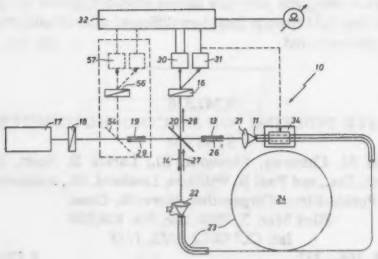
Mark Johnson, Wigan, England, and Reinhard Ulrich, Leonberg, Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Fed. Rep. of Germany

Filed Jan. 14, 1980, Ser. No. 111,852

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1977, 2901388

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—350 **16 Claims**



1. A method for the measurement of rotation rates by the Sagnac effect in a light path encircling an area, employing two coherent light beams which are coupled into the two ends of said light path of which a section is subject to perturbations that affect the polarizations of said two light beams which, after they emerge again from the ends of said fiber, are superimposed so that they interfere, the rotation rate of said light path being evaluated from an analysis of the interference, said method being characterized in that said two light beams are coupled with defined states of polarization into said light path of which a section is subject to perturbations, and that said two interfering beams pass through at least one polarization analyzer, azimuth and ellipticity of which are adjusted for maximum transmission of light which is the conjugate of one of said light beams coupled into said light path at one end thereof, characterized in that an automatic control system, responding to variations of polarization, is used to maintain a stable state of polarization of at least one of said two light beams emerging from said perturbed section of said light path, said stable state of polarization being distinctly different from that state which is blocked by said polarization-analyer.

4,342,518

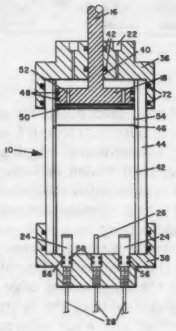
SUBSEAFLOOR ENVIRONMENTAL SIMULATOR

Donald J. Shirley, Leander, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 1, 1980, Ser. No. 211,600

Int. Cl.³ G01N *25/18, 29/00*

U.S. Cl. 374—44 **21 Claims**



1. A subseafloor environmental simulator comprising:

a pressure chamber to contain a sample;

means for compressing said sample within said pressure chamber to simulate overburden pressure;

means for allowing fluid to escape from said sample when subjected to said compressing means;

means for applying pressure to said fluid within said pressure chamber to simulate pore fluid pressure;

means for controlling the temperature of said pressure chamber and sample contained therein;

means contained within said pressure chamber for measuring the acoustic and thermal conductivity properties of said sample when subjected to compression and fluid pressure at a predetermined temperature; and

means for processing and displaying the data obtained by said measuring means.

4,342,519

CONNECTOR FOR AN END OF AN UNDERWATER PIPE

Yvon Botrel, Landorthe; Roland Fremond, Paris, and Jean Mourlevat, Roquefort sur Garonne, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Filed Mar. 20, 1980, Ser. No. 132,170

Claims priority, application France, Mar. 2, 1979, 79 06938

Int. Cl.³ F16L *1/04*

U.S. Cl. 405—169 **10 Claims**

1. Arrangement for connecting and disconnecting two underwater pipes comprising

a first pipe,

a terminal secured to an end of the first pipe,

a laying tool within and releasably secured to the terminal, said laying tool being attached to the end of a tension cable,

a second pipe,

a receptacle secured to an end of the second pipe,

a guide funnel at the end of the receptacle and converging toward the receptacle,

said laying tool comprising a tension chuck and a sealing plug connected together by an articulated connector,

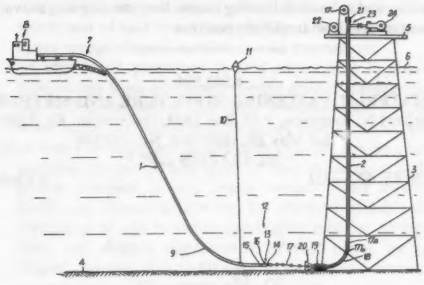
cooperating means on said chuck and terminal including locking means on said chuck, for releasably locking said chuck within said terminal against separation from the terminal upon application of a pulling force exerted by the tension cable,

plug lock means on said plug for releasably securing said plug in said terminal behind said chuck to seal the terminal end of said first pipe,

said tension cable being adapted to be thread through said second pipe to pull said terminal into said funnel and then into said receptacle in response to a pull exerted on said tension cable,

reversible means on said receptacle for securing said terminal in said receptacle,

reversible means on said receptacle for sealing said terminal in said receptacle,



axially moveable means on said chuck, moveable between a first position in which said locking means lock said chuck in said terminal and a second position in which said locking means are withdrawn and unlocked from said terminal, in response to pressure applied in said second pipe, and

means on said chuck for retaining said locking means in said unlocked position during pulling of the chuck through the second pipe by said tension cable,

and means on said plug for releasing said plug in response to a pull exerted thereon by said articulated connector during pulling of the chuck by the cable after release of the chuck from the terminal, said connector pulling said plug through the second pipe behind the pipe.

4,342,520

INKRIBBON FEED MECHANISM

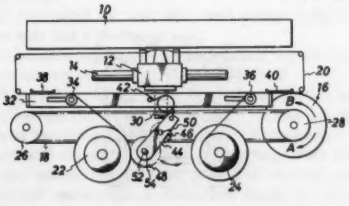
Minoru Isobe; Makoto Shimizu, and Shigemi Hagiwara, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,110

Claims priority, application Japan, Mar. 29, 1979, 54-036264

Int. Cl.³ B41J *33/44*

U.S. Cl. 400—221 **6 Claims**



1. An inkribbon feed mechanism for an open reel type printer, the inkribbon feed mechanism comprising a reversible spacing motor, a timing belt connected to said spacing motor to be driven thereby to move said printer, said printer printing as it moves from left to right across the width of the printer, a take-up reel and a supply reel, control means coupled between said timing belt and said take up and supply reels to cause movement of said inkribbon under control of said take up and supply reels selectively, said control means controlling said supply reel to move said inkribbon when said printer is moving from left to right and said spacing motor is rotating in one direction, said control means disengaging said timing belt from being coupled to said supply reel to halt movement of said inkribbon as said printer moves to its return position from right to left, said control means comprising means to sense when said inkribbon reaches each end of said inkribbon, said control means comprising means responsive to sensing that said inkribbon is at one end to shift said control means to couple said timing belt to said take-up reel to control movement of said inkribbon by driving said take-up reel, said inkribbon being moved by said take-up reel as said printer returns to its original print position, wherein said control means comprises a pivotable arm having a pivot point, one end of said pivotable arm having an oblong slot in which a planetary gear is rotatably connected thereto, said take-up and supply reels each comprising respective gear members driven by said planetary gear to drive each respective reel, said spacing motor rotating in one direction as said planetary gear is coupled to said gear member of said supply reel, a control drive gear connected to said pivotable arm at the pivot point of said pivotable arm and being coupled to said timing belt, said control drive gear coupled to said planetary gear, said spacing motor reversing its direction when the printer reaches its far right position causing said timing belt to reverse its direction and move said planetary gear in said oblong slot decoupling from said gear member of said supply reel.

4,342,521

PAPER FEEDING APPARATUS

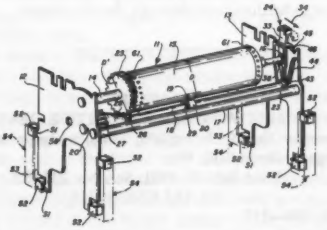
Lothar Kuhn, Frankfurt, Fed. Rep. of Germany, assignor to Adlerwerke vorm Heinrich Kleyer A.G., Nuremberg, Fed. Rep. of Germany

Filed Dec. 23, 1980, Ser. No. 219,576

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014340

Int. Cl.³ B41J *13/02*

U.S. Cl. 400—637 **6 Claims**



1. Paper feeding apparatus including a frame,

a platen rotatably mounted in said frame,

a shaft supporting a friction feed roll for engagement with said platen rotatably supported at one end in said frame,

lever means pivotally supported on said frame, and

bearing means on said lever eccentric to said pivot for supporting the other end of said shaft, whereby pivoting movement of said lever means will pivot said shaft about its said one end.

4,342,522

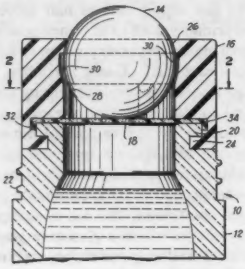
ROLL-ON DISPENSER WITH A FLEXIBLE MEMBRANE

Leonard Mackles, New York, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 776,459, Mar. 10, 1977, abandoned. This application Nov. 17, 1980, Ser. No. 207,591

Int. Cl.[3] A45D *33/12*; B43M *11/02*

U.S. Cl. 401—214 6 Claims



1. As an article of manufacture a dispenser adapted for dispensing powder comprising a container having powdered material disposed therein and further having an open end, an applicator disposed in the open end, supporting means for rotatably supporting the applicator and limiting its movement inward into the container, which means contact an inner minor portion of the applicator, and an annular member surrounding an outer minor portion of the applicator to limit the outward movement of the applicator away from the open end of the container; said supporting means comprising a plurality of spaced lugs, the spaces between the lugs permitting passage of material from the container when the applicator is in contact with the lugs, thereby enabling continuous dispensing of the material, a variably porous membrane of open-celled foam or sponge material interposed between the applicator and the portion of the container adapted to hold the material to be dispensed, the porosity of the membrane varying with the degree of its deformation, said membrane having from about 25 to about 150 holes per linear inch and is about 0.005 to about 0.50 inches thick; the means for rotatably supporting the applicator permitting its inward movement against the membrane, whereby the applicator bears against and deforms the membrane without blockage of the continuous flow of powder when it is pressed inwardly to allow a controlled amount of material to be dispensed through the membrane.

4,342,523

HIGH-LOW FORCE AMPLITUDE DEVICE

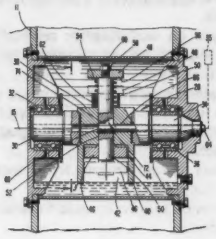
Chittaranjan Salani, Springfield, Ohio, assignor to Koehring Company, Brookfield, Wis.

Filed Feb. 24, 1981, Ser. No. 237,653

Int. Cl.[3] E01C *19/38*

U.S. Cl. 404—117 8 Claims

1. In a vibratory compacting roller apparatus of the type including a rotatable compacting roll, vibrator means operably connected to said roll to vibrate the latter, said vibrator means including a shaft rotatable relative to said roll, a motor for rotating said shaft, a movable eccentric mass rotatable with the shaft and adjustable transversely thereof, and position regulating means for regulating the position of said mass to provide for variable amplitude of vibration produced by said vibrator means, the improvement wherein said position regulating means comprises yieldable biasing means acting upon said movable mass for automatically positioning the movable mass radially inwardly to the low-amplitude position when the shaft is at rest whereby minimal start-up torque is imposed upon the



motor, and releasable locking means for retaining said movable mass in said low-amplitude position.

4,342,524

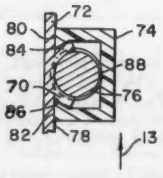
MATERIAL FASTENING STRUCTURE AND METHOD

Richard N. Anderson, P.O. Box 1613, Owensboro, Ky. 42301

Filed May 28, 1980, Ser. No. 153,946

Int. Cl.[3] F16B *2/00*

U.S. Cl. 403—331 6 Claims



1. Structure for fastening a first member having a surface and an edge to a second member comprising a U-shaped member having parallel extending leg portions with free outer ends and a connecting portion extending between the other ends thereof, means for securing the outer ends of the leg portions of the U-shaped member to the surface of the first member adjacent the edge thereof and fastening means positioned between the surface of the first member and the inside of the U-shaped member.

4,342,525

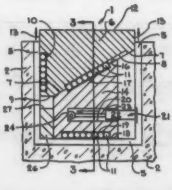
RETRACTABLE SPEED BUMP

Carl T. Mastronuzzi, Jr., 6701 Jefferson Paige Rd., Lot 328, Shreveport, La. 71119

Filed Aug. 21, 1980, Ser. No. 180,008

Int. Cl.[3] E01F *13/00*

U.S. Cl. 404—6 3 Claims



3. A retractable speed bump for controlling the speed of vehicles in a roadway comprising:

(a) an encasement having a floor, and side and end walls;

(b) a lower wedge-shaped member having a first inclined plane facing upwardly and slidably dispose on said floor of said encasement, and provided with a transverse opening in the vertical side thereof opposite said first inclined plane;

(c) an upper wedge-shaped member having a second inclined plane facing downwardly and slidably disposed on said first inclined plane of said lower wedge-shaped member;

(d) at least one first slot in said first inclined plane and at least one matching second slot in said second inclined plane opposite said first slot and shorter than said first slot, and at least one wedge block slot in the base of said lower wedge-shaped member, and at least one cap block slot in the side of said upper wedge-shaped member opposite said second inclined plane, and a plurality of ball bearings in said first slot and said matching second slot, and in said wedge block slot and said cap block slot to better facilitate movement of said lower wedge-shaped member and said upper wedge-shaped member in said encasement;

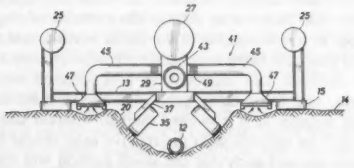
(e) a stop block positioned in said encasement in spaced relationship from said lower wedge-shaped member and supporting one side of said upper wedge-shaped member when said speed bump is in retracted configuration; and

(f) at least one single-action hydraulic cylinder having a base mounted on one of said walls of said encasement and a pistion attached to said lower wedge-shaped member inside said transverse opening for selective, slidable displacement of said lower wedge-shaped member horizontally, and slidable displacement of said upper wedge-shaped member along said first inclined plane and said second inclined plane vertically upwardly responsive to activation of said hydraulic cylinder.

4,342,526
SUBMERSIBLE BACKFILL MACHINE

Al H. Mousselli, Houston, Tex., assignor to Applied Offshore Technology, Inc., Houston, Tex.

Filed Jun. 5, 1980, Ser. No. 156,561
Int. Cl.³ E02F 7/00
U.S. Cl. 405—159 **9 Claims**



1. Apparatus for covering a submerged conduit disposed within a trench in a sea bottom with material from said sea bottom, which comprises:

a sled positionable over said conduit in said trench on said sea bottom;

a pump supported by said sled, said pump including an intake side and a discharge side;

a pair of intake heads supported by said sled adjacent to said sea bottom on opposed sides of said trench;

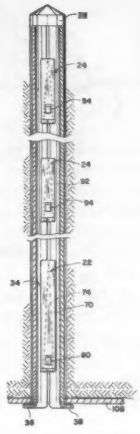
means for connecting said intake heads to said intake side of said pump for the flow of water and entrained sea bottom material through said intake heads and into said pump;

and a conical shaped dispersion nozzle supported by said sled and positioned generally over said conduit and between and rearwardly of said intake heads, for directing the flow of water and entrained sea bottom material from said discharge side of said pump over said conduit and for diffusing said flow from said discharge side such that said entrained material settles into said trench to cover said conduit.

4,342,527
SUPPORT ASSEMBLY FOR UNDERGROUND MINE AND TUNNEL ROOFS

Claude C. White, Birmingham, Ala., assignor to Birmingham Bolt Company, Birmingham, Ala.

Filed Jul. 10, 1980, Ser. No. 168,410
Int. Cl.³ E21D 21/00
U.S. Cl. 405—259 **6 Claims**



1. A support assembly for positioning in openings in underground mine and tunnel roofs, said assembly including

(a) an elongated tubular member comprising a pair of semi-cylindrical portions in facing relationship

(b) means for joining one pair of opposed longitudinal edges of said semi-cylindrical portions together

(c) the other pair of opposed longitudinal edges having a plurality of angularly disposed portions in facing engagement with each other, providing a plurality of tapered openings in the tubular member wall

(d) a plurality of wedge members positioned in each of the tapered openings

(e) each of said wedge members including a wedge section engaging the facing, angularly disposed portions of the longitudinal edges

(f) an abutment connected to each of said wedge members and extending inwardly of said tubular member

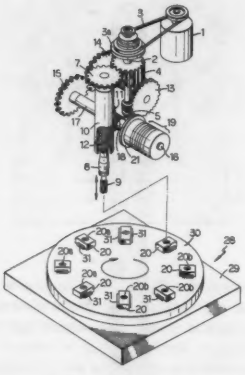
(g) said wedge member nearest the lower end of said tubular member being longer than the remaining wedge members, and the angle formed by the wedge section of said wedge member nearest the lower end of the tubular member being smaller than the angle formed by the wedge section of the remaining wedge members, whereby greater force can be exerted by the longer wedge member to initially urge said tubular member outwardly into engagement with the mine or tunnel roof, and

(h) a ram inserted into said tubular member and successively engageable with each of said abutments for urging said wedge members upwardly into the tapered openings, thereby spreading said semi-cylindrical portions apart and effecting expansion of said tubular member into bonding engagement with the mine or tunnel roof, each of said abutments being sheared from said wedge members by said ram upon application of a predetermined force on each abutment.

4,342,528
TAPPING MACHINE

Takashi Nozu; Minoru Yamada, and Yasuhiko Watanabe, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 16, 1980, Ser. No. 187,547
Claims priority, application Japan, Sep. 29, 1979, 54-125510
Int. Cl.³ B23B 35/00, 41/18
U.S. Cl. 408—6 7 Claims

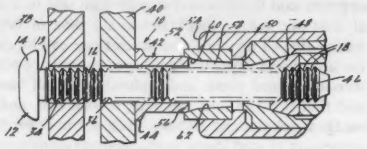


1. A tapping machine comprising:
a frame,
a quill reciprocably mounted on said frame,
a spindle rotatably mounted in, and reciprocated with, said quill, carrying a screw tap at one end thereof,
a reversible electric motor operatively connected to said spindle so as to rotate said spindle in forward and backward direction,
quill feed means operatively connected to said motor so as to move said quill in advancing and returning direction, and including an overload release clutch for disconnecting the power transmission from said motor to said quill when overload is applied to said quill in forward movement of said quill,
pulse-signal generating means disposed between said overload release clutch and said quill for generating a pulse-signal each time said quill moves one unit distance in forward movement of said quill,
means for setting a stroke of the forward movement of said quill,
preset counter for memorizing the number of pulse-signals corresponding to said stroke of said quill,
turn position sensing means for generating a turn position sensing signal when the number of pulse-signals from said pulse-signal generating means accords with the number of pulse-signals memorized in said preset counter,
a driving circuit connected to said electric motor for performing a working cycle, in which said quill advances and said spindle forwardly rotates before the generation of the turn position sensing signal from said turn position sensing means, and then said quill returns to a start position thereof and said spindle backwardly rotates after the generation of the turn position sensing signal from said turn position sensing means,
overload sensing means for generating an overload sensing signal when the interval of generation of pulse-signal by said pulse-signal generating means is longer than a predetermined time, and
means for controlling said driving circuit to reverse the rotational direction of said motor when said overload sensing signal is generated from said overload sensing means.

4,342,529
MULTIGRIP FASTENER

Walter J. Smith, Waco, Tex., assignor to Huck Manufacturing Company, Irvine, Calif.

Continuation of Ser. No. 26,652, Apr. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 899,591, Apr. 24, 1974, Pat. No. 4,208,943. This application Jan. 14, 1981, Ser. No. 224,916
Int. Cl.³ F16B 19/05
U.S. Cl. 411—361 18 Claims

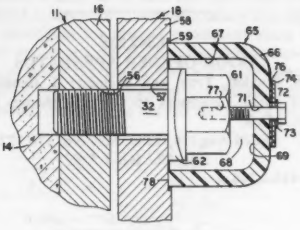


1. In a two piece fastener for fastening a plurality of workpieces together with the workpieces having a thickness varying from a determinable minimum to a determinable maximum thickness, comprising a pin member having a head and a shank portion having a plurality of grooves thereon and a tubular member adapted to be swaged into locking engagement with a predetermined number of said grooves on the shank portion of the pin member by means of a tool having a swaging anvil adapted to engage the tubular member and gripping means adapted to grip a gripping portion of the shank portion, the tool being actuable to apply a relative axial tensile force between the pin member and the tubular member whereby the tubular member is swaged into said predetermined number of said grooves on the shank portion of the pin member, at least said predetermined number of said grooves being annular combination locking and breakneck grooves, each of said predetermined number of said grooves being defined by first and second radially outwardly diverging sidewalls, the improvement comprising the juncture of said diverging sidewalls at each of the grooves including a concave radius portion interconnecting the radially inner ends of said first and second sidewalls, a selected one of the grooves being located at a predetermined location proximate the outer end of the tubular member and adapted to receive the material of the tubular member as it is swaged onto the shank portion, said first and second sidewalls being angulated such as to provide a relative force between said sidewalls in said selected one of the grooves, said force being generated by the material of the tubular member as it is swaged therein, wherein said relative force will be additive with the relative axial tensile force applied by the tool such that the shank portion will fracture at said selected one of the grooves, said convace radius portion being of a magnitude selected to provide a predetermined stress concentration to facilitate fracture at said selected one of the grooves in response to the combination of said relative force and said relative axial tensile force, any one of the grooves being capable of functioning as said selected one of the grooves when located at said predetermined location while said pulling tool exerts the relative axial tensile force on the pin member, said gripping portion of the shank portion located at the end opposite said head and having a plurality of different grooves adapted to be gripped by the gripping means of the tool, said different grooves having a shape different from that of said combination grooves to avoid an effective stress concentration of the magnitude of said predetermined stress concentration and wherein said different grooves have an axial length substantially equal to the distance between the point of engagement of said swaging anvil with said tubular member and the forward end of said gripping means plus the axial length of the portion of said gripping means engaging said gripping portion less the axial length of the transition portion.

4,342,530
WATER DAM FOR A FASTENER

Douglas H. Baker, and Dennis P. Dry, both of York, Pa., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jun. 11, 1979, Ser. No. 47,111
Int. Cl.³ F16B *35/00*; B65D *53/00*
U.S. Cl. 411—374 1 Claim



1. Apparatus for confining water that leaks past a component fastener in a hydro-turbine machine to a localized area, comprising in combination:

a fastener comprising a relatively heavy screw having an enlarged head portion and a shank portion with securing means thereon, said fastener passing through an opening formed in a first component into threaded engagement in an opening in a second component to which said first component is to be secured;

a spot face surface formed on the component which is to be secured and constructed and arranged to be engaged by the head of said fastener;

a cup-shaped enclosure member molded in a single cavity mold of an elastomer material disposed in position on said spot face surface surrounding the head portion of said fastener;

securing means comprising a threaded screw to lock said cup-shaped enclosure member in operative fastener enclosing position to the component which said fastener is securing, said threaded screw securing means being constructed and arranged to pass through a circular opening formed in said cup-shaped enclosure and into threaded engagement with said fastener, said threaded screw securing means having a diameter which is greater than the diameter of said circular opening formed in said enclosure through which said screw securing means passes and operable to force said enclosure into intimate sealing contact with the spot face surface;

a threaded opening in the head of said fastener screw in which said threaded screw securing means engages; and,

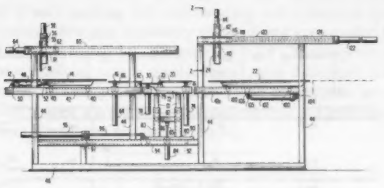
a relatively large washer externally of said cup-shaped enclosure member engaged on said threaded screw securing means and extending to a substantial extent radially outwardly thereof so that the head portion of said threaded screw securing means applies a clamping force thereto which said washer distributes over a relatively large area of said cup-shaped enclosure member.

4,342,531
METHOD AND APPARATUS FOR HANDLING BRICKS

Joseph A. Cox, Fletcher, and Daniel K. Jones, Asheville, both of N.C., assignors to EA Industries, Incorporated, Asheville, N.C.

Filed Feb. 29, 1980, Ser. No. 125,906
Int. Cl.³ B65G *57/22*
U.S. Cl. 414—46 30 Claims

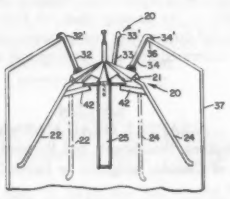
1. A method of facing and stacking rows of bricks to bring at least two rows of bricks into stacked interrelationship with the faces of the bricks in one row contacting the faces of the bricks in the other row comprising the steps of: individually pivoting the rows of bricks respectively from a generally horizontal plane towards each other into generally vertical planes until their faces are opposing each other and then pivoting the rows of bricks as a unit into horizontal planes to place them into stacked interrelationship with their faces contacting each other, and wherein the bricks are initially positioned on first and second fold plates, respectively and the bricks are individually pivoted by means of the fold plates, and wherein initially the bricks are conveyed in end-to-end relationship and they are individually pivoted about their adjacent ends, and wherein initially the adjacent ends of the bricks are separated from each other by moving the fold plates away from each other prior to individually pivoting the bricks.



4,342,532
ADJUSTABLE GRAIN SPREADER

William H. Voegele, R.R. #5, Bismarck, N. Dak. 58501

Filed Jul. 16, 1980, Ser. No. 169,436
Int. Cl.³ B65G *65/32*
U.S. Cl. 414—299 2 Claims



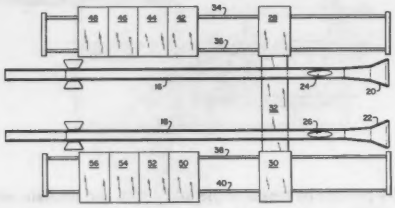
1. A grain spreader apparatus comprising a cone having a reduced upper end and tapered outward and downward with an enlarged lower end, said cone having radial extending recessed channels with raised converging portions therebetween, a plurality of pivoted channels each having its one end pivotally mounted to the lower end of the cone in the recessed channels of the cone to provide an extension for the recessed channels in the cone, said pivoted channels pivoting radially inward and outward from the cone, a central plate mounted beneath the cone, means to raise and lower the plate, said pivotal channels extending downward over the outer edges of said plate, said pivoted channels having projecting lug means on the pivoted channels, projecting hook means mounted to said cone to mount said cone in a center upper opening of a grain bin, whereby grain may be poured through the opening in the grain bin onto the cone and directed by the converging portions of the cone into the recessed channels of the cone, with the recessed channels directing the grain onto the pivoted channels where the grain will travel off the outer end of the pivoted channels, said plate means when raised and lowered by said raising and lowering means engaging said lugs on said pivoted channels to pivot the outer ends of the channels radially inward and outward to change the radial position of the channels radially inward and outward to change the radial position of the outer ends of the pivoted channels to thereby change the radial position of the grain traveling off the outer ends of the pivoted channels.

4,342,533

RECIPROCAL METHOD AND APPARATUS FOR TRANSFERRING VEHICLE BATTERIES

Dale R. Hane, 110 Union St., Sunbury, Pa. 17801

Filed Dec. 14, 1979, Ser. No. 103,617
Int. Cl.³ B65G *67/02*; B60L *11/18*
U.S. Cl. 414—396 **3 Claims**



1. Apparatus for transferring an associated vehicle battery from an associated vehicle having an elongated battery chamber which extends between two extremities of the vehicle which comprises:

a loading station which includes first means for carrying an associated battery;

means for urging said means for carrying toward an associated vehicle, said means for urging comprising cooperating rack and pinion gears;

an unloading station which includes second means for carrying an associated battery;

means for connecting and for mounting said loading and unloading stations for movement with respect to the associated vehicle in a direction which is generally transverse to the axis of the battery chamber thereof; and

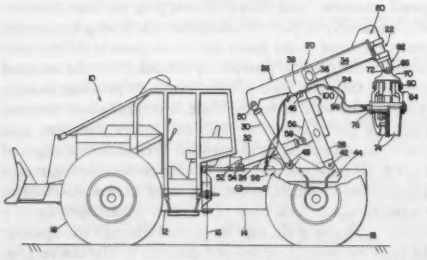
said means for connecting comprises a cross member which extends intermediate said loading and unloading stations.

4,342,534

GRAPPLE HEAD HARNESS

Thomas L. Bestard, Woodstock, and Richard R. Roesler, Plattsville, both of Canada, assignors to Eaton Corporation, Cleveland, Ohio

Filed May 30, 1980, Ser. No. 154,695
Int. Cl.³ B66C *1/42*
U.S. Cl. 414—734 **6 Claims**



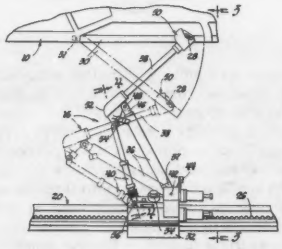
1. In a grapple skidder having a frame, a boom assembly mounted on said frame, a grapple head assembly mounted on said boom assembly for pivotal movement about generally horizontal and vertical axes, and means for selectively inhibiting said pivotal movement of said grapple head assembly; the improvement wherein said means for inhibiting movement of said grapple head assembly comprises first and second cables of substantially equal length having one end attached to said grapple head assembly at points spaced apart and symmetrically disposed about said vertical axis, and the opposite ends extending toward said frame, means on said frame for retracting and extending said first and second cables independently and simultaneously toward and away from said frame, and guide means attached to said boom assembly between said retracting and extending means and said grapple head assembly and having a longitudinal centerline intersecting said vertical axis, said first and second cables extending through said guide means.

4,342,535

DOOR-OPENER APPARATUS

Donald S. Bartlett, Troy, and Theodore J. Beaulieu, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 14, 1980, Ser. No. 178,172
Int. Cl.³ B25J *5/02*
U.S. Cl. 414—744 A **3 Claims**



1. An apparatus for seizing and releasing an article supported for movement between a first position and a second position and comprising: a base, a primary arm having one end thereof mounted on said base for pivotal movement about a first pivot axis; a secondary arm having an intermediate portion thereof mounted on the other end of said primary arm for pivotal movement about a second pivot axis; a link comprising two axially aligned and relatively movable members, one of said members of said link being pivotally connected to said base at a point spaced from said first pivot axis for pivotal movement about a third pivot axis, and the other of said members of said link being connected to a portion of said secondary arm for pivotal movement about a fourth pivot axis; yieldable means between said members of said link for maintaining said link at a predetermined length; a gripper mounted at the free end of said secondary arm; a motor connected to said primary arm for moving said primary arm about said first pivot axis so as to cause said gripper to move towards said article under the control of said link and seize said article; and means operatively associated with said members of said link and responsive to relative movement thereof after said primary arm moves said article from said first position to said second position for providing a signal that said gripper has seized said article.

4,342,536

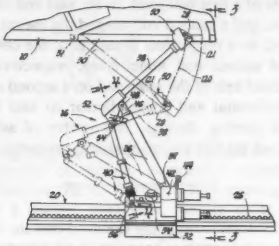
DOOR-OPENER APPARATUS

Hadi K. A. Akeel, Sterling Heights; Donald S. Bartlett, Troy; Theodore J. Beaulieu, Warren, and Mitchell Choly, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 14, 1980, Ser. No. 178,380
Int. Cl.³ B25J *5/02*
U.S. Cl. 414—744 A **2 Claims**

1. An apparatus for seizing and releasing a hinged member of a vehicle body and adapted to move from a first position wherein said apparatus seizes said hinged member while in a closed position to a second position wherein said apparatus holds said hinged member in an opened position while said vehicle body is transported along a path past said apparatus,

said apparatus adapted to assume a stored position and comprising a carriage movable in either direction along a track located adjacent to said path; a primary arm having one end thereof mounted on said carriage for pivotal movement about a first pivot axis; a secondary arm mounted on the other end of said primary arm for pivotal movement about a second pivot axis; a link having one end thereof pivotally connected to said carriage at a point spaced from said first pivot axis for pivotal movement about a third pivot axis, the other end of said link being connected to a portion of said secondary arm adjacent to said second pivot axis for pivotal movement about a fourth pivot axis; an article gripper mounted at the free end of said secondary arm; means carried by said secondary arm for selectively operating said article gripper for causing said article gripper to seize or release said hinged member of said vehicle



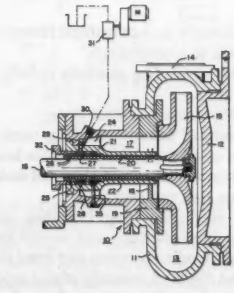
body; a motor connected to said primary arm for moving said primary arm and said secondary arm under the control of said link about said first pivot axis to said first position, said second position and said stored position, the arrangement of said first, second, third, and fourth pivot axes being such that the distance between said first pivot axis and said third pivot axis is substantially twice the distance between said second pivot axis and said fourth pivot axis, and a straight line passing through said first pivot axis and said third pivot axis intersects a straight line passing through said second pivot axis and said fourth pivot axis at a point located to one side of said track so as to permit the longitudinal center axis of each of said primary arm, said secondary arm, and said link to be located substantially parallel to said path along which said vehicle body is transported when said apparatus is in said stored position.

4,342,537

IMPELLER PUMP AND SEAL

Thomas S. Goyne, 37 S. Ninth St., Ashland, Pa. 17921

Filed Apr. 8, 1980, Ser. No. 138,863
Int. Cl.³ F04D *29/10*
U.S. Cl. 415—170 A **16 Claims**



1. A centrifugal pump comprising a housing, a pump chamber in said housing, a pumping impeller in said pump chamber, a rotatable shaft extending through said housing into said chamber carrying said impeller, a packing box in said housing surrounding the rotatable shaft adjacent the pump chamber, a rotatable sleeve removably fixed on said shaft extending from said impeller through said packing box and rotating with said shaft, a stationary sleeve in said housing connected to said packing box and extending from said packing box to a point adjacent said impeller and surrounding a portion of said rotatable sleeve between said packing box and impeller, packing means in said packing box surrounding said rotatable sleeve, said packing box and stationary sleeve being surrounded by a liquid being pumped by said impeller over a major portion of its outer surface, and a displacement type lubricant source connected to said packing box supplying continuous lubrication into at least a portion of said packing box and between the rotatable sleeve and stationary sleeve.

4,342,538

FACE-TYPE SHAFT SEAL

Dale E. Wolford, Ashland, and George S. York, Mansfield, both of Ohio, assignors to The Gorman-Rupp Company, Mansfield, Ohio

Filed Jun. 2, 1980, Ser. No. 155,405
Int. Cl.³ F04D *29/10*
U.S. Cl. 415—170 A **4 Claims**

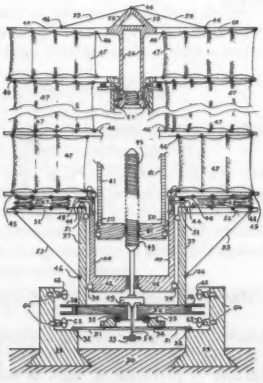
1. In a face-type shaft seal for a rotating shaft including structure providing a non-rotating seal face around the shaft, torque-transmitting drive means having one part adapted to be fixed to the shaft and an axially movable second part, a seal ring carried by said second part of said drive means, spring means biasing said seal ring axially of the shaft into engagement with said non-rotating seal face, and flexible seal means forming a fluid seal between said ring and the shaft and allowing axial movement in said seal ring, the improvement comprising a protective, flexible boot arranged inside said spring means around the assembly of said flexible seal means and said torque transmitting drive means to prevent contaminants from accumulating on said flexible seal means, said boot defining a space between itself and said flexible seal means.

4,342,539

RETRACTABLE WIND MACHINE

James A. Potter, 12 Greenhouse Blvd., West Hartford, Conn. 06110

Filed Feb. 13, 1979, Ser. No. 12,055
Int. Cl.³ F03D *11/04*
U.S. Cl. 416—9 **21 Claims**



1. Apparatus for conversion of wind energy into rotational power comprising:

a base;

a rotating mast adapted to rotate about a generally vertical axis;

flexible airfoil sails extending somewhat horizontally from the vertically disposed mast, and adapted to catch the wind and rotate the mast, there being a pair of airfoils at each of a plurality of heights along said rotating mast;

a plurality of airfoil support members, each of some of upper support members securing the bottom of an airfoil above it and the top of an airfoil below it;

telescopic means adapted to permit said airfoil support means to be lowered into a storage mode in which at least some of the airfoils are stored in a zone protected from some of the effects of a windstorm;

said telescoping means being a part of the rotatable mast means, whereby the number of sails exposed to the wind and the tautness of at least some of the sails can be adjusted by the extent of the upward movement of the telescoping mast;

resilient means urging the rotating mast into a standard vertical position, but adapted to permit the rotating mast to tilt not more than a controlled angle in response to the wind, thereby permitting the airfoils more efficiently to rotate the mast;

output transmission means directing power to at least one transducer;

moderate duty power transmission means adapted to transmit power from the rotating mast to said output power transmission means;

heavy duty power transmission means adapted to transmit power from the rotating mast to said output transmission means;

control means actuated by the tilt of the mast for utilizing said moderate duty power transmission means during the standard vertical positioning of the mast and for utilizing said heavy duty power transmission means during the rotating of the mast at a controlled amount of tilt;

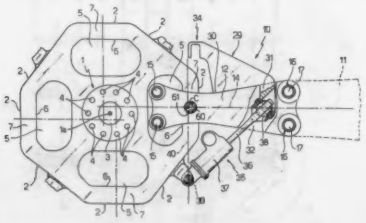
strain gauge means in the base responsive to the strain of tilting of the mast, said strain gauges detecting any dangerous wind velocities at the airfoils for lowering the airfoils and mast for storage during windstorms.

4,342,540

ARTICULATED ROTOR FOR HELICOPTERS

Bruno Lovera, Cardano; Santino Pancotti, Gallarate; Emilio Pariani, Cardano, and Giuseppe Virtuani, Milan, all of Italy, assignors to Costruzioni Aereonautiche Giovanni Agusta S.p.A., Italy

Filed Jan. 21, 1980, Ser. No. 113,726
Claims priority, application Italy, Feb. 2, 1979, 67223 A/79
Int. Cl.³ B64C *27/38*
U.S. Cl. 416—140 **2 Claims**



1. A multi-blade articulated rotor for helicopters, comprising:

a hub connected to a shaft rotatable substantially about a vertical axis, the hub being in the form of a plate comprising a plurality of perforations, each of which defines a bridge of material of said plate between a part of the edge of said perforation and a part of the edge of said plate;

a plurality of yokes, each of which is subtantially of U shape and comprises a pair of substantially parallel arms and a base element which connects together one end of said arms, the other end of the arms being connected to one of said perforations in the hub in such a manner that the corresponding bridge is disposed between said yoke arms, and the longitudinal axis of the yoke is oriented in a radial direction to the hub;

a plurality of elastomer bearings, each of which is disposed between said base element of a yoke and the corresponding hub bridge, and is bounded by a pair of coaxial spherical surfaces whose center falls within the section of the corresponding bridge;

a plurality of operating levers, each of which is arranged to control the variation of the angle of pitch of a corresponding blade of the rotor and has an end inserted between said arms of the relative yoke; and

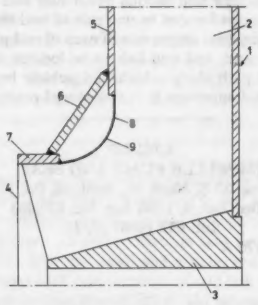
a plurality of dampers, each of which has a first end hinged, by means of a first ball joint, to the said end of the operating lever, and a second end hinged, by means of a second ball joint, to a projection of said hub, the centers of said first and second ball joints lying, respectively, on said longitudinal axis of the yoke and on a second axis substantially horizontal and perpendicular to said longitudinal axis and passing through said center of said spherical surfaces of the bearing of elastomer material.

4,342,541

IMPELLER ASSEMBLY FOR A CENTRIFUGAL BLOWER

Seppo J. Leskinen, Vaserskog, Finland, assignor to Oy Nokia AB, Helsinki, Finland

Continuation of Ser. No. 61,303, Jul. 27, 1979, abandoned. This application May 7, 1981, Ser. No. 261,560
Claims priority, application Finland, Aug. 23, 1978, 782578
Int. Cl.³ F01D *29/28*
U.S. Cl. 416—186 R **1 Claim**



1. An impeller assembly for a centrifugal blower comprising:

a back plate joined to a central hub,

a plurality of blades extending generally radially of said hub and said back plate,

a generally radially extending front plate,

a generally cylindrical axially extending suction ring disposed ahead of said front plate, said blades being disposed between and adjacent said front plate and said back plate, and said suction ring and said hub,

a frusto-conical supporting ring extending between and secured to said front plate and said suction ring, and

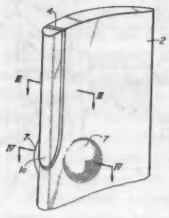
guide ring means extending between said front plate and said suction ring and disposed inwardly of said supporting ring defining aerodynamically correct fluid flow passages between said blades, wherein said guide ring means essentially does not receive stresses relative to said supporting ring which transfers stresses from said front plate to said suction ring.

4,342,542

MOVING BLADE OF STEAM TURBINE

Toshimi Tan; Katsukuni Hisano, and Takao Mizoi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 1, 1979, Ser. No. 90,435
Claims priority, application Japan, Nov. 10, 1978, 53/137911
Int. Cl.[3] F01D *5/14*
U.S. Cl. 416—224 3 Claims



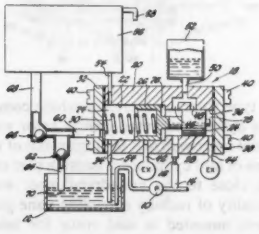
1. A moving blade for use in a steam turbine having a turbine rotor, a plurality of radially outwardly extending moving blades provided on the turbine rotor, each moving blade being provided at a leading edge of a radially outer end portion thereof with an anti-errosion plate, protrusion means projecting in a thicknesswise direction of said moving blade provided on both sides of a portion of said moving blade in a vicinity of a base of said anti-errosion plate where the anti-errosion plate is attached to said moving blade at an end closer to said turbine rotor for relieving stress at said portion of the moving blade and for preserving an original profile shape of the blade, each of said protrusion means having a surface of curvature of an arcuate cross-sectional configuration, said moving blade having a radial distribution of cross-sectional area such that the cross-sectional area is greater at said portion where said protrusion means are formed than at any other portions which are adjacent to said portion of said moving blade, as viewed in a radial direction.

4,342,543

OIL LEVEL CONTROL

Karl D. Allen, Canton; Mark A. Perlick, Brighton, and Jack H. Van Gorder, Chelsea, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 4, 1980, Ser. No. 175,315
Int. Cl.[3] F04B *49/00*
U.S. Cl. 417—211.5 4 Claims



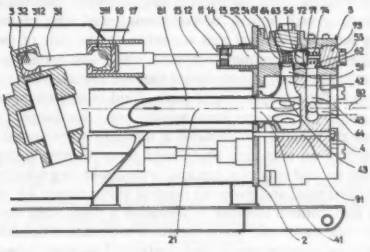
1. An oil level control for a fluid pressure system having a fluid pump pressure source, a primary reservoir and a secondary reservoir; said level control comprising; a reciprocating fluid pump having intake and discharge strokes; passage means for interconnecting said reciprocating fluid pump with the primary and secondary reservoirs, said passage means extending into the primary reservoir and including an opening at the fluid level desired to be maintained in the primary reservoir; valve means in said passage means for simultaneously permitting fluid flow from the primary reservoir and preventing fluid flow from the secondary reservoir during the intake stroke of the reciprocating fluid pump, said valve means also simultaneously permitting fluid flow to the secondary reservoir and preventing fluid flow to the primary reservoir during the discharge stroke of the reciprocating fluid pump; fluid motor means formed integrally with said reciprocating pump means and including an annular expansible chamber selectively connected to the fluid pump pressure source to enforce movement of the reciprocating pump during the initial portion of the discharge stroke thereof, and a cylindrical expansible chamber adapted to be pressurized to enforce movement of the reciprocating fluid pump during a secondary portion of the discharge stroke; a fluid pressure accumulator selectively and sequentially connected with said annular chamber and said cylindrical chamber and being pressurized by said fluid pump pressure source when the annular chamber is pressurized; restricted exhaust passage means in fluid communication with said cylindrical chamber for providing controlled exhausting of the fluid pressure in said pressure accumulator through said cylindrical chamber during the secondary portion of the discharge stroke; and spring means operatively connected with said reciprocating fluid pump for enforcing the intake stroke thereof.

4,342,544

RECIPROCATING PUMP

Gerard Pere, Le Breuil, France, assignor to Creusot-Loire, Paris, France

Filed Mar. 28, 1980, Ser. No. 135,852
Claims priority, application France, Mar. 30, 1979, 79 08006
Int. Cl.[3] F04B *1/18*
U.S. Cl. 417—269 5 Claims

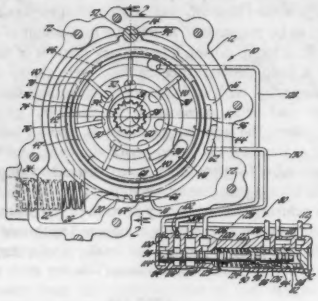


1. A pump for liquid comprising:
(a) a plurality of pumping chambers formed by cylinders fixed to a support structure in a barrel type arrangement and by pistons slidable in said cylinders under the action of drive means;
(b) a central cylinder head having
(i) a central distribution channel;
(ii) a plurality of conduits diverging radially from said central distribution channel; and
(iii) a plurality of collector conduits opening into a collector passage connected to a general discharge conduit;
(c) a plurality of lateral cylinder heads arranged radially about said central cylinder head, each of said lateral cylinder heads being sealingly in abutment against a surface of said central cylinder head;
(d) intake valves and discharge valves mounted on each of said lateral cylinder heads;
(e) conduits in said lateral cylinder heads communicating with said radial conduits and with said pumping chambers;
(f) whereby said liquid is carried from a general intake pipe through said central distribution channel and said radial conduits which communicate downstream of said intake valves with said pumping chambers, said discharge valves being located downstream of said pumping chambers to control the flow of said liquid carried by said collector conduits.

4,342,545
VARIABLE DISPLACEMENT PUMP

David A. Schuster, New Boston, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 927,507, Jul. 24, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 110,044
Int. Cl.³ F04C *15/02, 29/08*
U.S. Cl. 418—26 2 Claims



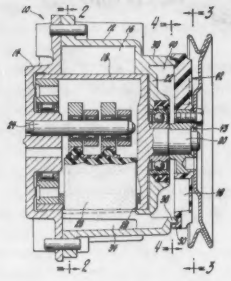
1. A variable displacement vane pump comprising; a housing; inlet and discharge ports formed in said housing; a drive shaft rotatably mounted in said housing; a rotor driven by said drive shaft and coaxially aligned therewith; a plurality of radially extending vanes slidably disposed in said rotor; pivot means disposed in said housing; a ring member pivotally disposed on said pivot means in said housing and cooperating with said housing to form a displacement control chamber including wall means for positioning said ring member, said ring having a central axis eccentric to the axis of said rotor, said ring cooperating with said rotor and vanes to form a plurality of pumping chambers that are successively connected to said inlet aand discharge ports, fluid in said chambers creating an interal pressure force adjacent said discharge port which force is directed to establish a moment continuously in one direction on said ring about said pivot means; spring means acting on said ring member and urging said ring member in said one direction; and pressure control valve means for pressurizing said control chmber to establish a controlled moment on said ring about said pivot means in a direction opposite to the first mentioned moment, said controlled moment being cooperable with said spring means and said wall means to control the displacement of said pump by controlling the pivotal position of the center of the ring within a quadrant defined by intersecting perpendicular lines one of which intersects the axis of said rotor and the other of which intersects the axes of both the rotor and the pivot means, said quadrant being remote from and exclusive of the pivot means, and the center of said ring being continually noncoincident to either of the intersecting perpendicular lines defining said quadrant.

4,342,546
AIR PUMP WITH CENTRIFUGAL FILTER

Frederick L. J. Rehfeld, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 19, 1980, Ser. No. 161,157
Int. Cl.³ F01C *21/00;* B01D *45/14*
U.S. Cl. 418—47 2 Claims

1. An air pump comprising a housing defining a pumping chamber having an end wall, a pumping member disposed in said chamber and having a shaft extending through said wall, said wall having an opening for air flow into said chamber, a rim extending outwardly from said wall concentric with said shaft and defining an annular recess between said rim and said shaft, and a centrifugal filter element mounted on said shaft and enclosing said recess to define an inlet plenum for air flow to said opening, said filter element having a plurality of curved passages extending substantially radially from the atmosphere at their outer ends to said plenum at their inner ends whereby foreign material is separated from and centrifuged out of the air flow through said passages to said plenum upon rotation of

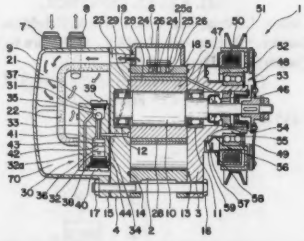


said shaft and said filter element, and wherein said filter element reaches beyond said rim and has a cylindrical extension which overlies and is closely adjacent the outer surface of said rim to inhibit passage of foreign material between said filter element and said rim.

4,342,547
ROTARY VANE COMPRESSOR WITH VALVE CONTROL OF OIL TO BIAS THE VANES

Kaichi Yamada, Kusatsu; Yoshiyuki Morikawa, Otsu; Katuharu Fujio, Shiga; Koichi Yoshihiro, Otsu; Toshio Matsuda, and Tatsuhisa Taguchi, both of Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 1, 1980, Ser. No. 136,392
Claims priority, application Japan, Apr. 4, 1979, 54-40574; Apr. 5, 1979, 54-41373; Apr. 5, 1979, 54-41374; Apr. 5, 1979, 54-41375; Apr. 5, 1979, 54-41376
Int. Cl.³ F04C *29/02*
U.S. Cl. 418—84 3 Claims



1. A vane type rotary compressor which comprises: a cylinder having a cylindrical inner wall; a rotor rotatable within said cylindrical inner wall and having an axis of rotation eccentric to the axis of said cylinder for causing part of the said rotor to approach close to the cylindrical inner wall, said rotor having a plurality of radially extending vane grooves therein; vane members mounted in said rotor for being selectively projected from and retracted into said rotor and contacting said cylindrical inner wall at the radially outer ends thereof; said cylinder having a discharge opening therein; a pair of front and rear end plates on said cylinder and holding said rotor and vanes between the inner faces thereof for forming a suction space and a compression space within said cylinder between said vanes and said rotor and on which said rotor is rotatably supported; a casing on said cylinder and forming a space communicating with said discharge opening and a lubricating oil tank at the bottom portion of said casing; said com-

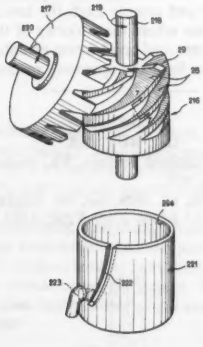
pressor having a lubricating oil supply passage extending between said lubricating oil tank and the radially inner ends of said vane grooves for feeding lubricating oil to said vane grooves at the pressure of the gas within said casing which has been discharged from said compression space for pressing the vane members against the cylindrical inner wall of said cylinder; a plunger valve mechanism in said supply passage and having a valve for selective opening and closing of said lubricating oil passage, a plunger bore, a plunger reciprocally movable in said bore and having one end engaging said valve for opening and closing said valve, and a seal ring having a comparatively large frictional resistance and provided between said plunger and said plunger bore; and said compressor having a pressure passage communicating at one end with the compression chamber in said cylinder and at the other end to said bore on the other end of said plunger, and means in said pressure passage forming a narrow passage having a small cross sectional area as compared to the cross-sectional area of the remainder of said pressure passage, whereby pressure within said compression chamber, when applied to the other end of said plunger through said pressure passage, overcomes the discharge gas pressure within said casing so as to move said plunger and to open said valve for feeding the lubricating oil to said vane grooves under said discharge pressure.

4,342,548

SCREW HAVING A V-SHAPED GROOVE PROFILE FOR COOPERATING WITH A PINION IN A COMPRESSION OR EXPANSION MACHINE

Bernard Zimmern, Neuilly sur Seine, France, assignor to Uniscrew Limited, Hamilton, Bermuda

Division of Ser. No. 897,497, Apr. 18, 1978, Pat. No. 4,222,691.
This application Dec. 5, 1979, Ser. No. 100,399
Claims priority, application France, Jun. 2, 1977, 77 16861
Int. Cl.³ F01C *1/12, 21/08;* F04C *18/12*
U.S. Cl. 418—195 **2 Claims**



1. In a compression or expansion machine having a screw rotatable on an axis and at least one pinion having teeth disposed on a cylinder, the improvement comprising:

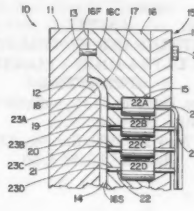
a V-shaped groove profile in said screw, said profile having one flank inclined with respect to radial lines passing through the axis of the screw and another flank lying parallel to such radial lines, the teeth on said pinion complementing the shape of said groove profile for cooperation of said pinion and said screw.

4,342,549

APPARATUS FOR CODING ARTICLES

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 968,216, Dec. 11, 1978, which is a continuation of Ser. No. 667,255, Mar. 16, 1976, abandoned.
This application Jan. 8, 1980, Ser. No. 110,545
Int. Cl.³ B29C *1/14;* B29F *1/022*
U.S. Cl. 425—150 **9 Claims**



1. Molding apparatus comprising in combination:

a first mold section,

a second mold section,

means for abutting said first and second mold sections to define a molding cavity therebetween,

a variable shaping means secured to one of said mold sections and protruding therefrom into the mold cavity formed between said mold sections,

said variable shaping means defined by a plurality of movable mold members variably positionable with respect to said one mold section to permit said mold members to be disposed in a coded array on said one mold section wherein selected of said members protrude into said mold cavity,

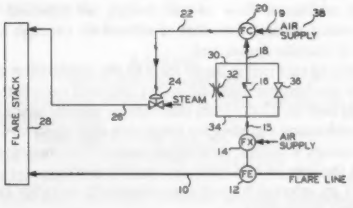
said mold cavity being configured to permit a moldable material disposed in said mold cavity to set and form an article of predetermined shape and said variable shaping means being operable to provide a plurality of cavities in a wall of said molded article, which cavities and their spacing define a code which is detectable by means disposed adjacent the molded article for sensing said cavities and actuating means to selectively protrude said movable mold members into said mold cavity.

4,342,550

METHOD AND APPARATUS FOR THE REDUCTION OF FLARE SMOKE EMISSIONS

Lee Tuck, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 18, 1980, Ser. No. 141,503
Int. Cl.³ F23J *7/00;* F23D *13/20;* F23J *15/00*
U.S. Cl. 431—4 **32 Claims**



1. A method comprising:

intermittently passing a combustible gas to a flare;

detecting the passing of said combustible gas to said flare;

generating a first signal representative of the passing of said combustible gas to said flare;

passing steam to said flare in response to said first signal and burning said combustible gas in said flare in the presence of said steam;

slowly decreasing the strength of said first signal when it is detected that said combustible gas is not being passed to said flare; and

passing steam to said flare in response to said decreasing first signal after said combustible gas has stopped being passed to said flare.

4,342,551

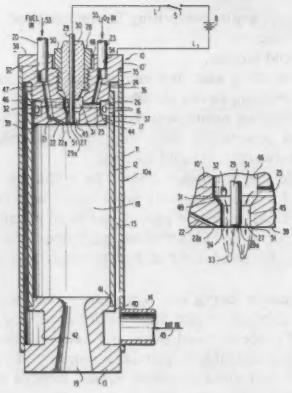
IGNITION METHOD AND SYSTEM FOR INTERNAL BURNER TYPE ULTRA-HIGH VELOCITY FLAME JET APPARATUS

James A. Browning, Hanover, N.H., assignor to Browning Engineering Corporation, Hanover, N.H.

Filed May 23, 1980, Ser. No. 152,965

Int. Cl.³ F23M *3/00*

U.S. Cl. 431—10 **4 Claims**



1. In a method of spark-igniting operating reactants in an internal burner type ultra-high velocity flame jet apparatus by causing a confined and selectively continuous stream of combustible fluid media formed of compressed natural air, oxygen-enriched air, or oxygen and a fuel constituting said reactants, to pass through an elongated cylindrical combustion chamber within said internal burner for discharge at the downstream end thereof through a flow constricting nozzle to the atmosphere and by effecting an electrical spark between a first electrode separated by a narrow annular space from a second concentric electrode and extending the length of the spark by passing a flow of natural air under pressure through the annular space, the improvement comprising the steps of:

effecting, at least during initial ignition and burner start up, an additional flow of gas having an enriched oxygen content greater than that of natural air through said narrow annular space, and

supplying said fuel in liquid form to the combustion chamber by discharging said liquid fuel into said enriched oxygen gas flow as it exits from said narrow annular space into the combustion chamber for atomizing said liquid fuel and for creating a highly enriched atomized fuel/oxygen mixture in the area of said extended length spark.

3. In an internal burner type ultra-high velocity flame jet apparatus comprising:

cylindrical tube means,

a nozzle piece closing off one end of said cylindrical tube means, and

an injector piece closing off the other end of said cylindrical tube means,

said cylindrical tube means, said nozzle piece and said injector piece defining an elongated combustion chamber,

means for supplying compressed air to said combustion chamber,

means for supplying fuel to said combustion chamber for mixing with said compressed air to form operating combustion reactants,

spark plug means carried by said internal burner and

means for creating an electrical spark between electrode means of said spark plug for effecting ignition of a combustible media formed by said operating reactants,

the improvement wherein:

said spark plug means comprises a spark plug including a central first electrode borne by said injector piece, axially aligned with said nozzle piece and insulated from said injector piece and carried by said injector piece coaxial with said nozzle piece at the opposite end of said combustion chamber from said nozzle piece,

said conductive injector piece including a portion surrounding said first electrode and forming a second electrode and being spaced therefrom to define an annular space,

said injector piece including an annular compressed air distribution chamber and having longitudinal gap means opening from said air distribution chamber to the combustion chamber interior along the inside periphery of said tube means,

means for supplying compressed natural air to said annular distribution chamber,

at least one radial passage standing between said annular space surrounding said central electrode and said annular distribution chamber for supplying compressed natural air to said annular space surrounding said central electrode,

a fuel supply passage within said injector piece opening to said combustion chamber adjacent said annular space between said first and second electrodes and,

means for supplying a gas having an oxygen content greater than that of said compressed natural air to said annular space during ignition and burner start up for atomization of liquid fuel entering said combustion chamber via said fuel supply passage, whereby: said gas having an oxygen content in excess of that of natural air causes atomization of the liquid fuel entering said chamber in the vicinity of the electrodes and an extended spark between said electrodes axially of said combustion chamber and remote from the inner periphery of said tube means where the majority of the compressed natural air enters said combustion chamber to mix with the fuel and to form the operating reactants therefor.

4,342,552

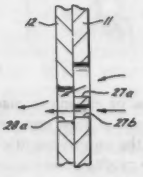
OIL BURNER

Raymond Trippet, Highland Springs, Va., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,759

Int. Cl.³ F23M *9/00*; F23Q *3/00*

U.S. Cl. 431—183 **16 Claims**



1. A method for improving the combustion in a gun type oil burner barrel supplied with a blast of high pressure air and which has a fuel nozzle coaxially positioned in the gun barrel

for forming a predetermined pattern of highly atomized fuel particles for being lighted by an igniter comprising the steps of,

(a) passing the blast of high pressure air through a plurality of pairs of holes in an inner air plate in the burner barrel,

(b) passing the air from each inner air plate pair of holes into a corresponding different single hole in a contiguous outer adjustable control air plate thus forming two incoming columns of high velocity air into the outer air plate single hole from each inner air plate pair of holes, one air column entering the single hole being parallel to the fuel nozzle and the second air column entering the single hole forming a portion of a spiral around the fuel nozzle, and

(c) combining and integrating the two incoming columns of high velocity air from each pair of holes into one large outgoing well mixed turbulent substantially straight column of air from the corresponding hole in the outer air plate for improved combustion by the igniter.

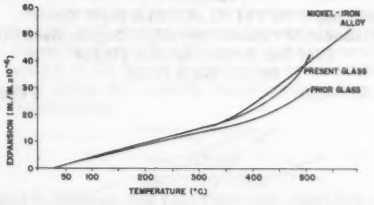
4,342,553
GLASS TO NICKEL-IRON ALLOY SEAL

William A. Graff, Willoughby, and George L. Thomas, Chesterland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 192,915, Oct. 1, 1980, abandoned. This application Sep. 29, 1981, Ser. No. 306,824

Int. Cl.³ C03C *3/08, 7/02;* F21K *5/02*

U.S. Cl. 431—358 **6 Claims**



1. A glass to metal hermetic seal directly between a nickel-iron metal alloy containing approximately 27–52 weight percent nickel and the balance iron except for minor amounts of other alloying elements and a glass composition which consists essentially of, in weight percent:

SiO_2: 55–66
Al_2O_3: 4.5–10
Na_2O: 0–4
K_2O: 3.5–7
B_2O_3: 19–26
TiO_2: 0–4

except for incidental impurities, residual fluxes and refining agents, having an average linear coefficient of thermal expansion in the 0°–350° C. temperature range between about 45 to 56×10^{-7} per °C. and a transformation temperature no greater than about 425° C.

4. In a photoflash lamp comprising a transparent glass envelope, filamentary combustible material within said glass envelope and inlead wires extending into said glass envelope, the improvements which comprise having the glass envelope formed with a glass composition which consists essentially of, in weight percent:

SiO_2: 55–66
Al_2O_3: 4.5–10
Na_2O: 0–4
K_2O: 3.5–7
B_2O_3: 19–26
TiO_2: 0–4

except for incidental impurities, residual fluxes and refining agents, having an average linear coefficient of thermal expansion in the 0°–350° C. temperature range between about 45 to 56×10^{-7} per °C. and a transformation temperature no greater than about 425° C., having the inlead wires formed with a nickel-iron alloy containing approximately 27–52 weight percent nickel and the balance iron except for minor amounts of other alloying elements, and having a direct hermetic seal between said glass envelope and said inlead wires.

4,342,554
PRODUCTION OF EXPANDED CLAY AND SHALE

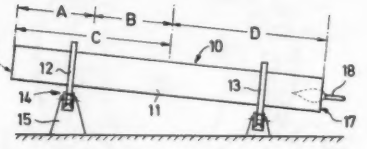
Hans-Joerg Rohrbach, Balingen, Fed. Rep. of Germany, assignor to Rohrbach Technologie KG Baustofftechnik GmbH & Co., Balingen, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,811

Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017288

Int. Cl.³ F27B *14/00*

U.S. Cl. 432—13 **9 Claims**



1. In a process for producing expanded clay or shale aggregate material in a rotary tubular kiln presenting an essentially linear product conveying and treating region free of lateral offset, the kiln including a raw material charging end and expanded material discharge end at respectively opposite ends of the conveying and treating region and being provided with a burner located in the vicinity of the discharge end for heating the conveying and treating region with the conveying and treating region being composed of a preheating zone and an expansion zone following one another in the direction from the charging end to the discharge end, the preheating zone being more proximate to the charging end and the expansion zone being more proximate to the discharge end, which process is carried out by operating the burner to introduce heat into the conveying and treating region while introducing raw material into the conveying and treating region via the charging end, and conveying the material through the preheating zone in order to dry and heat that material and then conveying the material into the expansion zone to produce the expanded material, with the heat produced by the burner acting to cause essentially all expansion of the material to occur in the expansion zone, and then discharging the expanded material via the discharge end, the improvement comprising providing at least one additional burner having a flame outlet orifice, mounting the additional burner on the kiln to rotate therewith in a position such that the flame outlet orifice is located within the kiln between the expansion zone and the material charging end and is oriented to direct a heating flame toward the material charging end, and supplying additional heat to the raw material in the preheating zone by operating the at least one additional burner to produce the heating flame.

4,342,555
SEALING APPARATUS

Victor A. Bohanszky, Fairview Park, Ohio, assignor to Davy Inc., Cleveland, Ohio

Filed Aug. 6, 1980, Ser. No. 175,727

Int. Cl.³ F27B *7/24;* F26B *25/00;* F27D *1/18*

U.S. Cl. 432—115 **4 Claims**

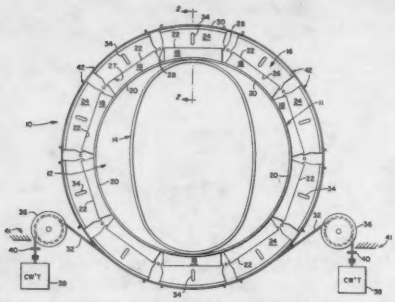
4. An apparatus for sealing a rotary member comprising:

(a) a rotary member having an opening in one end thereof for charging and discharging material therethrough, a plurality of blocks circumscribing said rotary member and engaging the periphery of said rotary member, said blocks acting to seal said opening from the surrounding atmosphere;

(b) means for biasing said blocks radially against said rotary

member including a rope having two ends, said rope overlapping over a portion of said blocks, spaced apart sheaves, weights attached to each end of said rope, said rope being looped about said sheaves such that hoop tension is constantly maintained on said blocks during movement toward and away from said rotary member by said blocks and corresponding movement of said rope is accommodated by raising and lowering of said weights;

(c) a plurality of sements for engaging corresponding ones of said plurality of blocks for holding said blocks against the periphery of said rotary member, each of said segments



having an inner surface for engaging a corresponding one of said graphite blocks and an outer surface for engagement by said rope;

(d) said inner surface of each of said segments having a channel configuration with channel sides to engage sides of corresponding blocks to prevent movement of the blocks in a circumferential direction; and

(e) each of said segments having a radial slot for engagement with a fixed member extending through said slot to provide for radial movement due to changes in the peripheral surface of said rotary member while preventing substantial circumferential movement of said segments.

4,342,556

APPARATUS FOR SIMULATED SHOOTING WITH HIT INDICATOR

Werner Hasse, Fischbeker Str. 18, 2153 Neu Wulmstorf, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,541

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 2905422

Int. Cl.³ F41J *5/12*

U.S. Cl. 434—22 **14 Claims**

1. An apparatus for simulating shooting, comprising:

a laser transmitter for transmitting a laser beam towards a target;

evaluation means for determining the direction of deviation of the laser beam from the target;

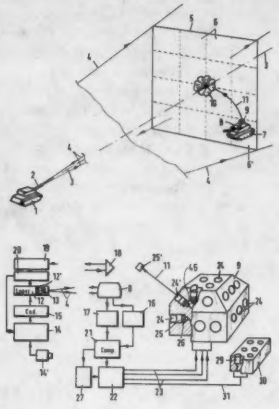
a hit indication means positioned on the target comprising at least one pyrotechnic charge; and

ignition means to ignite the pyrotechnic charge in response to the evaluation means;

an ejector device controlled by the evaluation means for ejecting the pyrotechnic charge from the target; and

ejector directional means in the ejector device for modifying the direction of ejection of said pyrotechnic charge;

said ejector directional means being controllable by said evaluation means so that the direction of ejection of the pyrotechnic charge is substantially into the direction cor-



responding to the off-aim direction determined by the evaluation means.

4,342,557

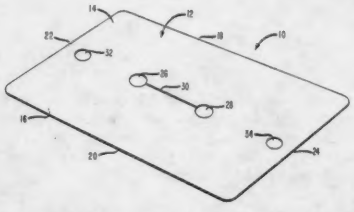
DEVICE FOR TYING DOUBLE BOW KNOT

Lesley F. Bandar, 53 Pleasant View Rd., Arlington, Mass. 02174

Filed Jun. 8, 1981, Ser. No. 271,504

Int. Cl.³ G09B *19/00*

U.S. Cl. 434—260 **6 Claims**



1. Device useful in tying a double bow knot in a length of material comprising a planar-shaped body member, a first pair of spaced-apart openings in and extending through said body member, an elongated narrow opening in and extending through said body member and connecting said first pair of spaced-apart openings, a second pair of openings spaced-apart a greater distance from one another than said first pair and located on an imaginary line in alignment with said elongated narrow opening, said second pair of openings being located equidistantly from each of said first pair of openings, said second pair of openings being unconnected by slits with said first pair of openings.

4,342,558

HYDROFOIL SWIM FIN ASSEMBLIES

Wayne Wilson, 153 1/2 N. 600 West, Salt Lake City, Utah 84116

Continuation-in-part of Ser. No. 965,314, Feb. 2, 1979, abandoned. This application Apr. 14, 1980, Ser. No. 140,338

Int. Cl.³ A63B *31/10*

U.S. Cl. 441—61 **10 Claims**

1. A hydrofoil swim fin apparatus comprising:

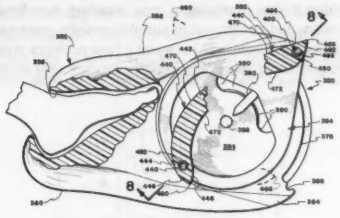
foot receiving housing means;

hydrofoil means disposed to the rear of the housing means;

means pivotably connecting the hydrofoil means to the housing means;

means defining the magnitude of clockwise and counterclockwise rotation through which the hydrofoil means may pivot in respect to the housing means;

the hydrofoil means comprising blade means comprising (a) leading edge means which divides the relative displacement of water across the blade means into upper and lower water portions, (b) trailing edge means where the upper and lower water portions merge and (c) central flexure means associated with both the leading and trailing edge means and comprising variable curvature means which are caused to flex between convex and concave



configurations during up and down strokes of the apparatus to enhance propulsion of the user through the water during both the up and the down-strokes through hydrofoil action;

the blade means comprise two opposed sections rotatably joined at a central hub to the housing means and means between said sections adjacent the central hub sized and shaped to enhance liquid flow across the outwardly flexed portion of the central flexure means and to inhibit liquid flow across the inwardly flexed portion of the central flexure means.

4,342,559

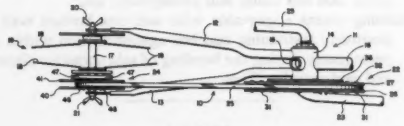
DRIVE SYSTEM

Robert N. Williams, Salt Lake City, Utah, assignor to National Technology Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 870,427, Jan. 18, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 132,996

Int. Cl.³ F16H *55/30*

U.S. Cl. 474—50 **10 Claims**



1. A variable diameter pulley comprising a hub, a first sideplate concentric to said hub and fixed thereto, a second sideplate concentric to said hub and rotatable about said hub relative to said first sideplate, a plurality of pairs of non-concentric curved slots in said first sideplate said slots extending outwardly and in the direction of rotation of said hub and first sideplate, a plurality of slots in said movable second sideplate said slots extending from an outer location adjacent the outer end of said curved slots in said first sideplate to an inner location adjacent the inner ends of said curved slots and said hub, a plurality of arcuate belt-engaging segments located between said first and second sideplates, a pair of pins extending laterally from the side of each of said arcuate segments facing said first sideplate, the pins of said pairs being spaced apart and located adjacent opposite ends of said segments and being received in the slots of one of said pairs of curved slots in said first sideplate, at least one pin extending laterally from the other side of each segment and received in a slot in said second sideplate, resilient means acting between said first and second sideplates to bias said second sideplate toward the position where said belt-engaging segments are at the limit of their outward travel in said slots, and said slots in said first and second sideplates being coordinated to the location of said pins on said arcuate segments so that at all radial locations of said pins in said slots a selected chord of each arcuate belt-engaging segment forms a right angle with a radius of said hub.

4,342,560

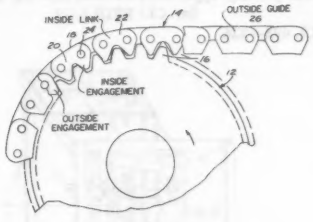
COMPOSITE CHAIN LINK ASSEMBLY

Timothy J. Ledvina, and Robert H. Mead, both of Ithaca, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed May 16, 1980, Ser. No. 150,370

Int. Cl.³ F16H *55/30*; F16G *13/02*

U.S. Cl. 474—157 **24 Claims**



1. A power transmission chain and sprocket combination having a plurality of ranks or sets of interleaved links, pivot means connecting the adjacent ranks or sets of links to permit the articulation of the chain, and a sprocket having a plurality of teeth substantially equally spaced around its periphery, the links of said chain each having a pair of toes separated by a crotch and each toe being defined by an outside flank and an inside flank, the inside flanks of a link at their ends being joined to said crotch, the improvement comprising:

some of the links of said chain being so constructed and arranged to drivingly contact the teeth of the sprocket on the outside flanks of the links only and others of the links of said chain being so constructed and arranged to drivingly contact the teeth of the sprocket on the inside flanks of the links.

4,342,561

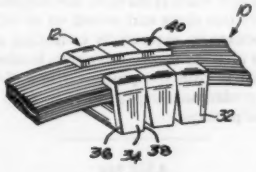
POWER TRANSMISSION BELT

Kenneth A. Braybrook, Letchworth, England, assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jun. 2, 1980, Ser. No. 155,256

Int. Cl.³ F16G *1/14, 5/12*

U.S. Cl. 474—242 **2 Claims**



1. A composite power transmission belt especially adapted to drivingly interconnect the pulleys of a pulley transmission, comprising:

first and second continuous metal bands, each having a plurality of perforations therethrough;

a first elastomer layer between said metal bands with elastomer portions in the perforations of each band;

a first helically wound tensile member in said first elastomer layer and between said metal bands;

a second helically wound tensile member on the outside of one of said metal bands; and

a second elastomer layer on said second helically wound tensile member.

4,342,562

PACKAGE AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

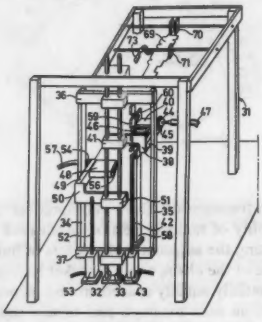
Tor A. Fröidh, Stenungsund, and Leif U. R. Widlund, Mölnlycke, both of Sweden, assignors to Molnlycke Aktiebolag, Sweden

Filed Dec. 12, 1979, Ser. No. 102,659

Claims priority, application Sweden, Dec. 21, 1978, 7813176

Int. Cl.³ B31B *3/26*

U.S. Cl. 493—124 **12 Claims**



1. A method of manufacturing a package from a package blank including a plurality of adjacent lateral surfaces intended to form the lateral surfaces of said package and a plurality of adjacent end wall sections intended to form at least one end wall surface of said package, each of said end wall sections being associated with one of said plurality of lateral surfaces, each of said adjacent lateral surfaces being defined by a first set of fold lines with respect to its adjacent lateral surface, and each of said end wall sections being defined by a second set of fold lines with respect to the lateral surface with which it is associated, said method comprising folding said package blank along said first set of fold lines by applying said package blank to the surface of a rotating shaping member including a plurality of surfaces coinciding with said plurality of lateral surfaces of said package so as to form a partially folded package including said lateral surfaces, moving said package blank along a predetermined path, and rotating said package blank by means of said rotating shaping member while it is moving along said predetermined path while at the same time sequentially folding said end wall section along said second set of fold lines at one end of said package by sequentially contacting said end wall sections with a plurality of stationary arms located adjacent to said predetermined path and projecting in a direction transverse to said predetermined path so as to form an end wall surface for said package.

4,342,563

BOX ASSEMBLY SYSTEM

Frederick R. Campbell, Cloverdale, Calif., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Jul. 28, 1980, Ser. No. 172,884

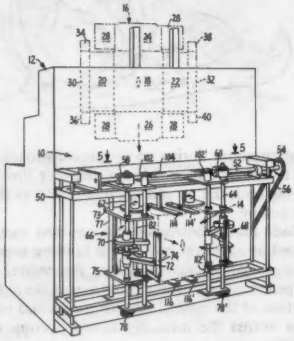
Int. Cl.³ B31B *1/46*

U.S. Cl. 493—168 **3 Claims**

1. In an apparatus for forming a box having a box body comprising interconnected bottom, side and end walls, shoulder elements connected to said side walls and securing flaps connected to said shoulder elements, the improvement comprising:

means for receiving said box body, said receiving means including a framework and skid means attached to said framework engageable with a plurality of said walls and defining a passageway for said box;

shoulder element positioning means adjacent to said skid means adapted to bend said shoulder elements relative to said side walls so that said shoulder elements define a box interior with said bottom, side and end walls when said box is disposed in said passageway, said shoulder element positioning means comprising reciprocating members and drive means for substantially simultaneously reciprocatably moving said members between a first position whereat said reciprocating members initially engage said shoulder



elements to a second position whereat said shoulder elements are bent substantially 90 degrees relative to said side walls;

securing flap positioning means adjacent to said skid means adapted to bend said securing flaps relative to said shoulder elements and to place said securing flaps into engagement with said end walls, said securing flap positioning means comprising rotatable cam members adapted to engage said securing flaps and urge said securing flaps into engagement with said end walls, said rotatable cam members additionally exerting a force on said box tending to move said box along said passageway; and

holding means engageable with said box bottom wall for positively restraining said box against motion within said passageway during the bending of said shoulder elements and said securing flaps.

4,342,564

APPARATUS FOR THE STACKING AND CONNECTION OF SYNTHETIC-RESIN FOIL BAGS

Hans Lehmacher, Auf dem Hummerich, 5216 Niederkassel-Mondorf, Fed. Rep. of Germany

Filed Jun. 13, 1980, Ser. No. 159,397

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924106

Int. Cl.³ B31B *23/14*

U.S. Cl. 493—195 **6 Claims**

1. An apparatus for producing a stack of interconnected synthetic-resin foil bags from a flattened plastic tube having a substantially uniform width, comprising:

punch means juxtaposed to a path of transport of said tube for forming a multiplicity of perforations therein defining the perimeter of a predetermined closed splicing area having at least one rectilinear side extending transversely to said tube and having a length smaller than said width;

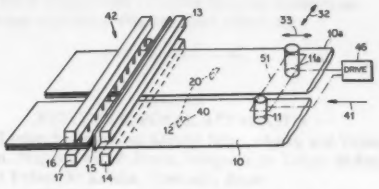
severing means at a stacking station for transversely cutting said tube along said side;

welding means for heat-sealing said tube to form a seam parallel to said side;

clamping means juxtaposed to said severing means for holding said tube during a cutting operation of said severing means;

a needle bar extending transversely to said path at said stacking station, said bar including needle means at least partially for aligning bags in a stack at said stacking station and heating means for thermally bonding splicing areas of adjacent bags in said stack; and

conveyor means for transporting said tube along said path to said stacking station, said heating means including at least one heatable mandrel extending perpendicularly to said tube and to said path, said needle means including at least two needles disposed parallel to said mandrel and substantially in a line therewith extending transversely to said tube, said bar being provided with at least one threaded



bore for the reception and mounting of a heater plug for thermally energizing said mandrel.

4,342,565

BRUSHED STRETCH DENIM FABRIC AND PROCESS THEREFOR

Edward W. Teague, Raleigh; Max H. Hance, Coats, and Carl R. Neal, Morresville, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 68,277, Aug. 20, 1979, Pat. No. 4,283,194. This application Apr. 6, 1981, Ser. No. 251,702

Int. Cl.³ C09B 7/00; B32B 7/00

U.S. Cl. 8—532 26 Claims

1. A stretchable indigo dyed denim fabric comprised of hot indigo dyed warp yarns and textured stretch filling yarns wherein the warp yarn is selected from the group consisting of polyester and cotton blends, natural and synthetic yarns and blends of natural and synthetics.

4,342,566

SOLID PHASE ANTI-C3 ASSAY FOR DETECTION OF IMMUNE COMPLEXES

Argyrios N. Theofilopoulos, and Frank J. Dixon, both of La Jolla, Calif., assignors to Scripps Clinic & Research Foundation, La Jolla, Calif.

Filed Feb. 22, 1980, Ser. No. 123,562

Int. Cl.³ G01N 33/54, 33/56

U.S. Cl. 23—230 B 5 Claims

1. An assay method for immune complexes comprising the steps of binding F(ab')2 anti-C3 to a solid substrate, reacting the fluid suspected of containing immune complexes with the bound F(ab')2 anti-C3, and determining the amount of bound immune complexes on said substrate.

4,342,567

SIALIC ACID DETERMINATION METHOD

Nonda Katopodis, Stanford, Conn., and C. Chester Stock, New York, N.Y., assignors to Sloan Kettering Institute for Cancer Research, New York, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,616

Int. Cl.³ G01N 33/52

U.S. Cl. 23—230 B 1 Claim

1. Method for determining sialic acid in blood plasma or serum, consisting essentially of the steps of:

transferring approximately 50 μl, precisely measured, of serum to a container with 150 μl distilled water;

vigorously mixing the container;

cooling the container and contents to about 32° F. (0° C.);

adding to the container 3 ml of cold (4°–5° C.) 2:1 v/v mixture of chloroform and methanol, and mixing vigorously;

adding 0.5 ml cold distilled water to the container and mixing gently;

separating the phases in the container by centrifuging;

adding 50 μl phosphotungstic acid solution (1 gram per ml) to 1 ml of the upper layer from the centrifuge mixture, and mixing;

allowing the phosphotungstic acid solution mixture to stand at room temperature for about 5 minutes;

centrifuging the phosphotungstic acid mixture for 5 mins. at 2500 rpm and removing the supernatant;

adding 1 ml water to the precipitate from which the supernatant has been removed, and mixing well until precipitate is in suspension without gross particles;

adding 1 ml of resorcinol reagent, mixing and placing the container in boiling water for a precise period of time of about 15 minutes;

thereafter transfering the container to an ice and water bath and allowing the contents to cool for about 10 minutes;

to the cold container contents adding 2 ml butyl acetate-n-butanol 85:15 v/v mixture at room temperature, mixing well and centrifuging for 5 minutes at 2500 rpm; and

reading the extractive blue color at 580 nm and determining the amount of lipid bound sialic acid by the use of standard curves developed from a standard sample of n-acetyl neuraminic acid (NANA) under the same conditions and by applying the following formula:

$$\text{LSA mg/100 ml plasma} = (X \cdot 100{,}000\lambda)/(y \cdot 44.7\lambda \cdot 1000)$$

x=γ NANA read from standard curve for the sample

y=1 ml of supernatant÷volume of entire supernatant (In our experience this had been 1.00/1.30).

4,342,568

REFUSE DISPOSAL APPARATUS

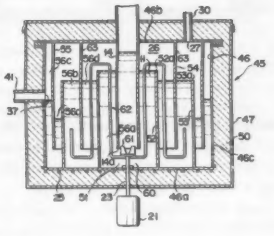
Koichi Taniguchi, Inuyama; Kiyomi Niwa, Ogaki, and Tadaaki Siraisi, Nagoya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 16, 1980, Ser. No. 169,352

Claims priority, application Japan, Jul. 20, 1979, 54-92855; Jul. 23, 1979, 54-94009; Aug. 14, 1979, 54-103317

Int. Cl.³ C10J 3/00

U.S. Cl. 48—111 7 Claims



1. A refuse disposal apparatus comprising:

a fermenting vat, including a ceiling portion and a bottom portion, for subjecting refuse supplied thereto to methane fermentation, said fermenting vat being covered with an adiabatic wall;

an inlet device for supplying said fermenting vat with the refuse, the inlet device including an inlet tube having a refuse inlet which extends through said ceiling portion and hangs down into the fermenting vat so that the lower end of the refuse inlet is immersed in the refuse in the fermenting vat, thereby forming in said fermenting vat a gas pool chamber which is cut off from air at said refuse inlet;

a heating device for heating refuse within the fermenting vat;

an agitating device for agitating refuse within the fermenting vat;

gas collecting means for removing from the fermenting vat methane produced as a result of methane fermentation of refuse therein; and

discharge means for removing from the fermenting vat sludge produced as a result of methane fermentation of the refuse,

the fermenting vat including more than one spaced apart overflow tubes each of which surrounds said inlet tube and extends upwardly from the bottom portion of the fermenting vat but does not extend to the ceiling portion and one or more partition walls located in spaces defined by adjacent overflow tubes and protruding downward from the ceiling portion of the fermenting vat without protruding to the bottom portion, each overflow tube being longer than the adjacent overflow tube surrounding it, the adjacent overflow tubes and the interposed partition wall together forming at least one U-shaped trap, whereby refuse emerging from the inlet tube is forced to flow over the top of each overflow tube and through said at least one U-shaped trap toward said discharge means.

4,342,569

METHOD AND APPARATUS FOR ABSTRACTING WATER FROM AIR

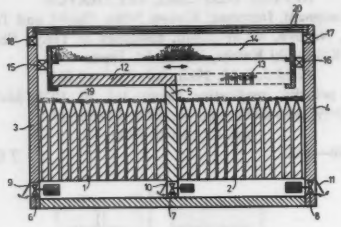
Peter Hussmann, Munich, Fed. Rep. of Germany, assignor to Mittex AG, Vaduz, Liechtenstein

Filed Sep. 4, 1980, Ser. No. 184,181

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1979, 2935697

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—33 31 Claims



1. A method of abstracting water from air using first and second heat storage condensers operated in conjunction with a single adsorber containing hygroscopic medium, said method comprising a recurring cycle comprising

a first phase wherein a stream of cool, humid air from the atmosphere is used first to cool the first heat storage condenser and then to moisten the hygroscopic medium;

a second phase wherein a stream of warm air heated by solar radiation is used to expel the moisture from the hygroscopic medium and to carry the expelled moisture into said first heat storage condenser where said moisture condenses and releases its heat of condensation;

a third phase wherein a second stream of cool, humid air from the atmosphere is used first to cool the second heat storage condenser and then to remoisten the hygroscopic medium; and

a fourth and final phase wherein a second stream of warm air heated by solar radiation is used to expel the moisture from the hygroscopic medium and to carry the expelled moisture into said second heat storage concenser where the moisture condenses and releases its heat of condensation; and

wherein the stream of warm air from said second phase is preheated using the heat of condensation picked up by said second heat storage condenser in said fourth phase, and the stream of warm air in said fourth phase is preheated using the heat of condensation picked up by said first heat storage condenser in said second phase before said warm air is additionally heated by solar radiation or used to expel moisture from said hygroscopic medium.

14. Apparatus for abstracting water from air comprising first and second heat storage condensers disposed in a structure with a transparent roof, a single adsorber means containing a hygroscopic medium disposed above said first and second heat storage condensers, and air handling means and air shut-off means for selectively passing streams of air through at least one of said heat storage condensers and through said adsorber means in a desired sequence and direction; said air handling means comprising first selectively operable fan means for passing a stream of air over said first heat storage condenser, second selectively operable fan means for passing a stream of air over said second heat storage condenser and third selectively operable fan means for passing a stream of air from one of said first and second heat storage condensers to the other of said first and second heat storage condensers and vice versa.

4,342,570

APPARATUS FOR SEPARATING DROPLETS OF LIQUID ENTRAINED IN A GAS OR A VAPOR

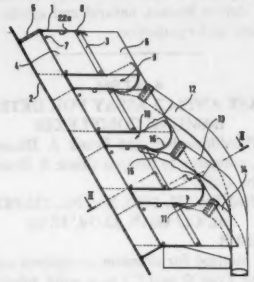
Jacques Marjollet, Paris; Jean-Claude Mevel, Les Ulis; Gerard Palacio, Montmorency, and Gerard Tondeur, Velizy-Villacoublay, all of France, assignors to Societe Anonyme dite: Stein Industrie, Velizy-Villacoublay, France

Filed Jul. 10, 1981, Ser. No. 282,348

Claims priority, application France, Jul. 10, 1980, 80 15364

Int. Cl.³ B01D *45/16*

U.S. Cl. 55—418 7 Claims



1. Apparatus for separating droplets of liquid entrained in a gas or a vapour, the apparatus comprising:

(a) stacked bundles of vertically disposed, parallel corrugated wafers between which the liquid droplet charged gas or vapour is made to flow, said bundles being housed between panels which are welded round all their edges to a support structure so as to define a horizontal gas or vapour flow direction between adjacent wafers;

(b) a gutter disposed at the lower edge of each bundle to collect the liquid running down the wafers; and

(c) a drain tube connected to each gutter so that the liquid collected by the gutters is drained away and wherein the lower edges of the wafers are notched in such a manner as to catch drops of liquid flowing along said lower edges and cause them to drop into the gutters rather than being entrained by the flow of the gas or vapour.

4,342,571

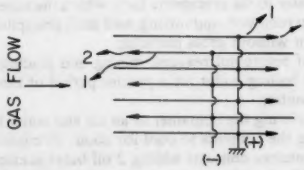
ELECTROSTATIC PRECIPITATOR

Tsutomu Hayashi, Yokohama, Japan, assignor to United McGill Corporation, Columbus, Ohio

Continuation of Ser. No. 739,802, Nov. 8, 1976, abandoned, which is a continuation of Ser. No. 560,191, Mar. 20, 1975, abandoned. This application Jun. 14, 1978, Ser. No. 915,460

Claims priority, application Japan, May 18, 1974, 49-50257

Int. Cl.³ B03C *3/08*

U.S. Cl. 55—137 11 Claims

1. An electrostatic precipitator for removing particles entrained in a fluid stream, comprising a plurality of flat-plate dust-collecting electrodes arranged in a generally uniformly spaced and parallel relationship as to be generally juxtaposed

with one another to thereby define therebetween passage means for the flow of said fluid stream therethrough, a first of said flat-plate dust-collecting electrodes having an upstream edge for being situated relatively upstream to the flow of said fluid stream, said first flat-plate dust-collecting electrode also having a downstream edge for being situated relatively downstream to the flow of said fluid stream, a second of said flat-plate dust-collecting electrodes also having an upstream edge for being situated relatively upstream to the flow of said fluid stream, said second flat-plate dust-collecting electrode also having a downstream edge for being situated relatively downstream to the flow of said fluid stream, said first flat-plate dust-collecting electrode having said upstream edge thereof positioned at a distance further upstream than said upstream edge of said second flat-plate dust-collecting electrode, said first flat-plate dust-collecting electrode also having said downstream edge thereof positioned at a distance further upstream than said downstream edge of said second flat-plate dust-collecting electrode, first discharge electrode means of a first electrical polarity carried only along said downstream edge of said first flat-plate dust-collecting electrode and extending therefrom, and second discharge electrode means of a second electrical polarity opposite to said first electrical polarity carried only along said upstream edge of said second flat-plate dust-collecting electrode and extending therefrom thereby providing for the production of uniform and non-uniform electric fields, said first discharge electrode means comprising a projecting end portion projecting in a first direction from said first flat-plate dust-collecting electrode, and said second discharge electrode means comprising a projecting end portion projecting in a second direction from said second flat-plate dust-collecting electrode, said first direction and said second direction being generally opposite to each other, said upstream edge of said first flat-plate dust-collecting electrode and said downstream edge of said second flat-plate dust-collecting electrode being devoid of discharge electrode means, said upstream edge of said second flat-plate dust-collecting electrode being situated substantially closer to said upstream edge of said first flat-plate dust-collecting electrode than to said downstream edge of said first flat-plate dust-collecting electrode, said downstream edge of said first flat-plate dust-collecting electrode being situated substantially closer to said downstream edge of said second flat-plate dust-collecting electrode than to said upstream edge of said second flat-plate dust-collecting electrode, said first discharge electrode means projecting in said first direction a distance such that said projecting end portion of said first discharge electrode means terminates at a location upstream relative to the location of said downstream edge of said second flat-plate dust-collecting electrode, and said second discharge electrode means projecting in said second direction a distance such that said projecting end portion of said second discharge electrode means terminates at a location downstream relative to the location of said upstream edge of said first flat-plate dust-collecting electrode.

4,342,572

THERMAL CIRCULATION GAS TREATER

Rodney T. Heath, 109 W. 31st St., Farmington, N. Mex. 87501

Filed Jan. 5, 1981, Ser. No. 222,285

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—160 **13 Claims**

1. In a well effluent separator system having a high pressure separator and a separate low pressure fluid dehydrator system with a reboiler for the fluid dehydrator, the improvement of a closed glycol heating system for the high pressure separator comprising:

(a) closed heat exchange coil means in the reboiler for heating the glycol of said closed heating system;

(b) a hot glycol supply means for receiving hot glycol from said coil means;

(c) standpipe means for delivering hot glycol from said hot glycol supply means;

(d) seal pot means defining a closed chamber and enclosing a lower end of said standpipe means for holding a variable quantity of hot glycol in a lower end portion thereof and a variable quantity of gas in an upper end portion thereof and having an upper surface level variably located above an inlet opening at the lower end of said standpipe means;

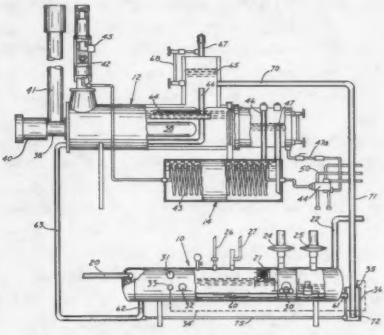
(e) heat exchange means in the high pressure separator receiving hot glycol from said seal pot means and for transferring heat from the hot glycol to the contents of the separator and being in continuous communication with a mid-portion of said seal pot means through a seal pot outlet opening located so as to be below the upper surface level of the hot glycol in a first mode of operation and above the upper surface level of the hot glycol in a second mode of standby operation;

(f) return line means for connecting said heat exchanger means to said coil means;

(g) variable pressure gas line means terminating in said seal pot means for controlling the glycol level therein for controlling the quantity of glycol transmitted to heat exchange means in the high pressure separator; and

(h) bypass line means for continuously connecting said seal pot means to said return line means whereby there is a constant continuous flow of hot glycol therebetween.

10. A fluid heating system for heating a gas-liquid type mixture in a gas-liquid separator unit of a natural gas dehydrator apparatus having a closed loop glycol-gas contacting system containing gas treatment glycol and including a reboiler unit for heating water rich laden gas treatment glycol after



contact with the natural gas to remove the water and provide hot lean gas treatment glycol for recirculation in the closed loop glycol-gas contacting system, the fluid heating system comprising:

a first heat exchanger means mounted in the gas-liquid separator unit for receiving hot separator-fluid heating glycol and transmitting heat from the hot separator-fluid heating glycol to the gas-liquid type mixture by conduction through the first heat exchanger means;

a second heat exchanger means mounted in the reboiler unit for receiving cool separator-fluid heating glycol from said first heat exchanger means and reheating the separator-fluid heating glycol by heat transfer from the hot lean gas treatment glycol in the reboiler unit by conduction through said second heat exchanger means to provide hot separator-fluid heating glycol for recirculation through said first heat exchanger means;

a storage means having a storage inlet opening connected to said second heat exchanger means for receiving hot separator-fluid heating glycol from said second heat exchanger means and storing a predetermined minimum volume of hot separator-fluid heating glycol therewithin prior to transfer to said first heat exchanger means, and having a storage outlet opening connected to said first heat exchanger means for enabling flow of hot separator-fluid heating glycol thereto;

a seal pot means having a seal pot inlet opening connected to

said storage outlet opening of said storage means for receiving hot separator-fluid heating glycol therefrom, and having a hot separator-fluid heating glycol holding chamber in the bottom portion thereof for holding variable amounts of separator-fluid heating glycol with variable upper surface levels of hot separator-fluid heating glycol therein, and having a gas holding chamber in the upper portion for holding variable quantities of gas;

a storage to seal pot passage means for enabling continuous flow of hot separator-fluid heating glycol from said storage means to said seal pot means and for providing a seal pot inlet opening within said seal pot means adjacent the bottom thereof adapted to be continuously located below the variable upper surface levels of the hot separator-fluid heating glycol held in said seal pot means;

a seal pot to first exchanger passage means for enabling flow of hot separator-fluid heating glycol from said seal pot means to said first heat exchanger means and for providing a seal pot outlet opening located above said seal pot inlet opening a distance such as to provide a first full continuous flow operating condition and a second variable continuous flow operating condition, and a third non-flow operating condition for hot separator-fluid heating glycol which are dependent solely on the level of hot separator-fluid heating glycol in said seal pot means;

a first heat exchanger to second heat exchanger passage means for enabling continuous flow of cool glycol from first said separator heat exchanger means to said second heat exchanger means providing a separator outlet opening located above a reboiler inlet opening;

bypass passage means for enabling continuous flow of hot separator-fluid heating glycol directly from said seal pot means to said first heat exchanger to second heat exchanger passage means under all conditions of operation of said seal pot means;

gas passage means having a gas inlet opening connected to the upper portion of said seal pot means for supplying gas at variable pressures thereto above the upper level of hot glycol in the lower portion thereof for holding variable quantities of gas under pressure to control the upper level of the hot separator-fluid heating glycol and establish the first, second and third operating conditions solely in accordance with the pressure and volume of gas in the chamber;

gas-operated control means for sensing the temperature of the fluids in said gas-liquid separator means and being operably connected to said gas passage means for controlling the flow of gas to said seal pot means and automatically establishing said first condition of operation whenever the temperature of the fluids in the separator is below a predetermined minimum temperature and automatically establishing said second and third operating conditions whenever the temperature of the fluids in the separator is above said predetermined minimum temperature;

said fluid heating system providing a closed loop separator-fluid heating glycol system having a flow path which is completely separate from the path of the closed loop glycol-gas contacting system, and being constructed and arranged to provide for continuous uninterrupted flow of separator-fluid heating glycol therewithin caused solely by thermosiphon effect due to the temperature differences between the hot separator-fluid heating glycol downstream and the cool separator-fluid heating glycol upstream of said second heat exchanger means.

4,342,573

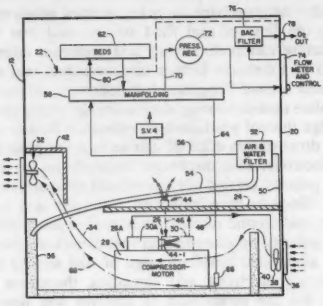
COMPACT OXYGEN CONCENTRATOR

Norman R. McCombs, Tonawanda, N.Y., and John Schlaechter, Grandview, Ohio, assignors to Greene & Kellogg, Incorporated, Tonawanda, N.Y.

Filed Oct. 12, 1979, Ser. No. 84,374

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—161 **40 Claims**



1. A machine for separating a constituent gas out of air using pressure swing adsorption, said machine including air compressor means, at least one vessel containing a bed of adsorbent material, said adsorbent material preferentially adsorbing at least one of the constituent gases in the air, a plurality of solenoid valves to control gas flows into and out of said at least one vessel, all of said plurality of solenoid valves being normally closed (no flow), control means for operating said solenoid valves in a cyclical manner to achieve alternate adsorption of said at least one constituent gas in and purging of said at least one constituent gas out of said at least one bed of adsorbent material according to a pressure swing adsorption technique, an unloading solenoid valve operatively cooperative with said compressor means, and said control means comprising means for electrically operating said unloading solenoid valve for dumping the compressor means air output until the pressure swing adsorption system is prepared to operate.

4,342,574

HOT GAS FILTER

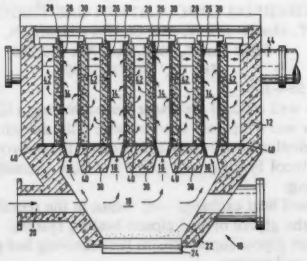
Wolfgang Fetzer, Mühlhausen, Fed. Rep. of Germany, assignor to Kraftanlagen AG, Heidelberg, Fed. Rep. of Germany

Filed Aug. 20, 1980, Ser. No. 179,835

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1979, 2935564

Int. Cl.³ B01D *29/14, 39/20, 46/02*

U.S. Cl. 55—341 M **17 Claims**



1. Hot gas filter for separating solid particles from high temperature gases or waste gases, comprising: a filter case made of heat-resistant brick-work, at least one oblong filter cell

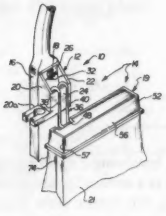
housed in said filter case, said case comprising a hot gas supply duct and means for connecting one end of said at least one filter cell with said hot gas supply duct, the other end of said at least one filter cell being tightly closed by a removable cover, said at least one filter cell having walls at least partly made of bricks with perforations, at least one replaceable filter hose of heat resistant fabric or tissue lining the walls of said at least one filter cell, and clean gas receiving means outside said at least one cell in said filter case for receiving hot gases passed through said at least one filter hose and said at least one filter cell and clean gas outlet means communicating with said receiving means for exhausting clean gas from said case.

4,342,575

BAG TOP COVER ASSEMBLY FOR A VACUUM CLEANER

Ernest R. Scott, Mayfield Hts., Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Sep. 24, 1981, Ser. No. 305,193
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—378 **9 Claims**



1. In an upright vacuum cleaner having a motor housing, a handle pivotally connected to said housing, and a flexible dirt-receiving bag extending between said housing and said handle, in combination therewith, the improvement comprising a top casing assembly for supporting the top of said bag, said top casing assembly comprising a rectangular cup-shaped cover having top, side, and end faces enveloping a portion of the top of said bag, attaching means attaching said cover to said handle and to the top of said bag within said cover, said attaching means including a wire hanger extending through the top face of said cover, said hanger extending from a location adjacent one end of said cover toward the other end of said cover, said attaching means further including clamping web means, means to fix said web means to the underside of the top face of said cover so that said web means clamps said wire against the underside of said top face, and means to attach said bag to said web means so that said enveloped portion of said bag substantially fills the longitudinal and lateral dimensions of said cover.

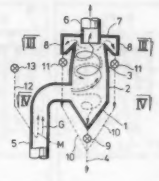
4,342,576

PARTICLE SEPARATOR

Masao Seki, and Hideo Sato, both of Yokosuka, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1980, Ser. No. 163,325
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—452 **3 Claims**

1. A particle separator for particle-laden gas, said separator having a lower body, an intermediate body and an upper body securely joined in the order named, said lower body being in the form of a conical hopper having at its bottom an outlet for collected particles, said intermediate body being cylindrical in shape and having an inlet for particle-laden gas to flow into said intermediate body, said inlet being so opened that the particle-laden gas is caused to spiral or swirl in said intermediate body, said upper body being of frustro-conical form and having a top wall spaced apart from said inlet by a selected distance, a gas discharge pipe mounted within the upper end of said upper body and extending through an opening in said top wall of said upper body coaxially thereof, said pipe having an entrance within the upper end of said upper body and spaced above said inlet enabling a non-reversing gas flow path to be established between said inlet and entrance, and particle trapping chambers extending from said upper body proximate the said top wall thereof and communicating with said upper body through openings formed through the peripheral wall thereof so that while the particle-laden gas spirals upward in said intermediate and upper bodies the particles separated from the gas can be trapped and collected in said particle trapping chambers

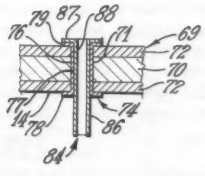


4,342,577

METHOD AND APPARATUS FOR FORMING GLASS FIBERS

Mohinder S. Bhatti, and Alfred Marzocchi, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 27, 1980, Ser. No. 200,676
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—1 **29 Claims**



1. A laminated wall for a feeder for supplying streams of glass to be attenuated into filaments comprising:

a refractory metal core having an oxygen impervious, precious metal sheath intimately bonded thereto by hot isostatic pressing to form a laminate, said laminate having at least one aperture extending therethrough adapted to permit said molten glass to flow therethrough; and

an element positioned in said aperture to prevent the oxidation of said core at elevated temperatures.

4,342,578

METHOD OF FORMING APPARATUS FOR FORMING GLASS FIBERS

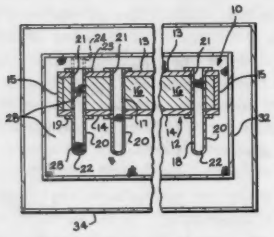
Mohinder S. Bhatti, Newark, and James M. Higginbotham, Sr., Reynoldsburg, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 20, 1981, Ser. No. 255,984
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—1 **7 Claims**

1. A method of forming a laminated wall for a feeder for supplying molten streams of glass to be attenuated into filaments comprising:

providing a refractory metal core;

providing oxygen impervious, precious metal sheathing material around said core, said sheathing material and said core having a plurality of apertures extending therethrough;



inserting oxygen impervious, precious metal elements into said apertures to form a loose assembly; and

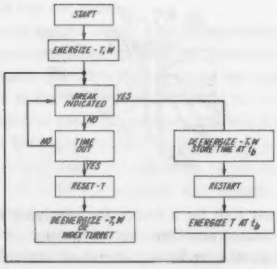
hot isostatically pressing said assembly to form said laminated wall having an oxygen impervious, precious metal sheath and elements intimately bonded thereto.

4,342,579

METHOD AND APPARATUS FOR COLLECTING STRAND

James E. Sanders, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 29, 1981, Ser. No. 229,682
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 **20 Claims**



1. A method of collecting glass filaments comprising:

supplying a plurality of streams of molten glass;

rotating a member to attenuate said streams into filaments and to collect said filaments as a first strand of glass filaments on said member in layers;

varying the speed of said rotatable member according to a predetermined pattern;

sensing the absence of said first strand being wound around said member to identify a reference point in said pattern;

supplying a second strand of glass filaments to said member from said streams;

initiating collection of said second strand upon said member over said first strand thereon at a speed substantially corresponding to said reference point in said pattern; and

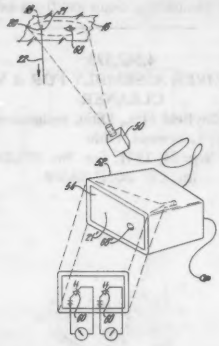
continuing to rotate said member according to said pattern subsequent to said reference point to attenuate said streams into filaments and to collect such filaments as said second strand of glass filaments thereon.

4,342,580

METHOD OF AND MEANS FOR MONITORING FILAMENT BREAK-OUTS OR GLASS FLOOD CONDITIONS IN A GLASS FILAMENT-FORMING PROCESS

Cletis L. Roberson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 2, 1981, Ser. No. 239,299
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—2 **32 Claims**



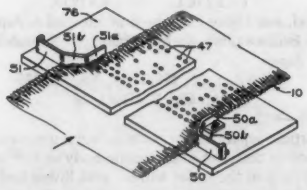
1. The method involving flowing streams of heat-softened glass from orifices in a stream feeder, attenuating the streams to filaments, scanning the stream flow region of the feeder by a lens system of a closed loop video camera, transmitting the image of the stream flow region on a matrix of optoelectronic photo detectors wherein a detector is responsive to an image of the accumulation of glass occurring at an orifice by reason of a filament break-out, the image of the accumulation of glass adapted to cause a change of state of the detector, transmitting from the detector the image of the accumulation of glass onto a receiver screen having a matrix of sweep line intersections corresponding to the spatial locations of the orifices in the feeder whereby the image of the glass accumulated at the orifice at which the filament break-out occurs visually appears on the screen.

4,342,581

MAT WIDTH CONTROL

Jeffrey A. Neubauer, Boiling Springs, N.C.; Walter J. Reese, North Huntington, Pa., and Jimmy D. Walker, Shelby, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 28, 1980, Ser. No. 198,744
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—4.4 **3 Claims**



1. In the manufacture of needled continuous strand mat wherein continuous strands in mat form are moved from a conveying surface through a needling zone in which the strands are entangled to provide mechanical bonding to the strands and integrity to the mat of strands by penetrating the mat repeatedly with rows of barbed needles, the improvement

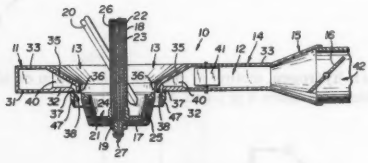
comprising moving the side edges of the mat inwardly as they enter the needling zone, confining the side edges so moved as they pass under the first row of needles in a straight line to form a straight edge to the mat on each side of the mat as the first row of needles penetrate the mat across its width thereof, continuing to confine the edges of the mat in a straight line until a few rows of needles have penetrated the mat across its width, releasing the edges of the mat after the first few rows of needles have penetrated it and continuing to needle the mat across its width throughout the remainder of the needling zone.

4,342,582

APPARATUS FOR FIBERIZATION OF MINERAL FIBER HAVING DIRECTIONAL SHROUD

William F. Porter, Lake Zurich, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Sep. 8, 1981, Ser. No. 300,313
Int. Cl.³ C03B *37/05*
U.S. Cl. 65—14 **13 Claims**



1. In an apparatus for producing mineral fibers by forming molten slag and transforming the slag into fibers, the improvement comprising in combination:

(a) An air plenum defining a substantially toroidal air chamber and having a circular central opening, wherein said plenum is formed of a front wall, a rear wall, and a peripheral wall connecting said front wall and rear wall in spaced-part relationship, a substantially conical wall having its outer edge connected to said rear wall and surrounding said central opening and converging towards said forward wall and defining a funnel for directing air toward said central opening, the radial dimension of said air chamber being greater than the axial dimension thereof, the lip of said front wall and the lip of said converging conical wall cooperating to define an annular slot for discharging air from said torodial chamber through said slot in an axial direction with respect to said torodial chamber, and a compressed air inlet provided in said plenum,

(b) An annular shroud in the form of a collar affixed at one edge to the lip of said front wall, said shroud having an inner cylindrical surface substantially perpendicular to the outer surface of said front wall and in registry with the edge of the lip of said front wall at the outer periphery of said annular slot, said shroud serving to guide and restrain radially air stream emerging from said annular slot and preventing it from expanding radially,

(c) a cup mounted on a shaft adapted for rotation, the lip of said cup being positioned at said annular slot, and

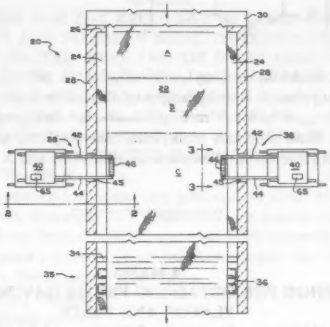
(d) means for introducing molten slag into the interior of said cup when said cup rotates, the arrangement being such that centrifugal force produced by rotation of said cup expels streams of molten slag into the air stream being discharged from said annular slot, and the air stream which is contained radially by said shroud transforms said slag streams into mineral fibers with improved yield.

4,342,583

APPARATUS AND METHOD FOR ATTENUATING FLOATING GLASS RIBBON

Edward M. Kapura, Carlisle, Pa., and Henry C. Goode, Decatur, Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 22, 1980, Ser. No. 219,147
Int. Cl.³ C03B *18/06*
U.S. Cl. 65—99.5 **23 Claims**



1. A method of attenuating a ribbon of glass which moves downstream through a chamber upon a pool of molten metal, comprising the steps of:

providing a cylindrical member having ribbon engaging means mounted in a manner to provide tractive forces about the circumferential surface of said cylindrical member;

supporting said cylindrical member with its lower circumferential surface adjacent and substantially parallel to the surface of said ribbon; and

rotating said cylindrical member about an axis of rotation generally parallel to the direction of ribbon flow to engage said ribbon with said ribbon engaging means to exert laterally outward tractive forces to the ribbon which are substantially uniform along the engaged portion thereof.

6. An apparatus for attenuating a ribbon of glass which moves downstream through a chamber upon a pool of molten metal comprising:

a generally cylindrical member;

a ribbon engaging element disposed on the circumferential surface of said cylindrical member;

a pair of spaced support members, each having a first end portion;

means for connecting said cylindrical member to and between said first end portions with its lower circumferential surface adjacent and substantially parallel to the surface of said ribbon; and

means for rotating said cylindrical member about an axis generally parallel to the direction of ribbon flow to engage the ribbon with said ribbon engaging element and exert laterally outward tractive forces thereto.

4,342,584

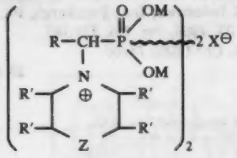
MICROBIOCIDAL PROCESS USING DI-QUATERNARY AMMONIUM SALTS OF α-1,4-THIAZINE ALKANEPHOSPHONIC ACIDS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 932,259, Aug. 9, 1978, Pat. No. 4,264,768.
This application Oct. 14, 1980, Ser. No. 196,973
Int. Cl.³ A01N *57/00, 57/26*
U.S. Cl. 71—67 **6 Claims**

1. A process of controlling the growth of microorganisms in aqueous or hydrocarbon systems which comprises treating said

system with an effective amount of a compound having the formula



where R is alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl or hydroxyphenyl, R' is hydrogen or alkyl, Z is S, SO or SO_2, M is hydrogen or a salt moiety, ~~~~ is a bridging group selected from alkylene, aralkylene, alkaralkylene, alkylene- or polyalkylene ether, alkenylene or alkinylene and X is a halide.

4,342,585

METHOD FOR OBTAINING FRUITS HAVING GOOD FLAVOR AND TASTE

Yoshie Motomura, Sendai; Jiro Ishiyama, and Junichi Shimizu, both of Noda, all of Japan, assignors to Kikkoman Corporation, Noda, Japan

Filed Sep. 8, 1978, Ser. No. 940,600
Claims priority, application Japan, Sep. 10, 1977, 52-108346
Int. Cl.[3] A01N *57/00*
U.S. Cl. 71—86 **5 Claims**

1. A method for obtaining fruits having good flavor and taste which consists essentially of contacting a member selected from the group consisting of fruit-bearing flowers before flowering, and fruits before being harvested, said fruit being selected from the group consisting of apple, tomato, and strawberry, with an effective amount of an aqueous solution containing at least one cyclic-3', 5'-adenylic acid compound selected from the group consisting of cyclic-3', 5'-adenylic acid, alkali metal salts of cyclic-3',5'-adenylic acid, and derivatives of cyclic-3',5'-adenylic acid, said cyclic-3',5'-adenylic acid being present in the concentration of 20 to 3000 p.p.m., and said derivatives of cyclic-3',5'-adenylic acid being selected from the group consisting of 6-benzyl-cyclic-3',5'-adenylic acid, 6-allyl-cyclic-3',5'-adenylic acid, 8-bromo-cyclic-3'5'-adenylic acid, 8-iodine-cyclic-3',5'-adenylic acid, N^6, O^2-(dibutyl ester)-3',5'-adenylic acid and N^6-(butyl ester)-cyclic-3'5'-adenylic acid.

4,342,586

SUBSTITUTED 2-IMINO-1,3-DITHIO AND 1,3-OXATHIO HETEROCYCLIC COMPOUNDS AS HERBICIDAL ANTIDOTES

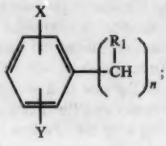
Frederic G. Bollinger, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 960,987, Nov. 15, 1978, Pat. No. 4,231,783. This application Jul. 21, 1980, Ser. No. 170,499
Int. Cl.[3] A01N *43/02, 37/00*
U.S. Cl. 71—90 **20 Claims**

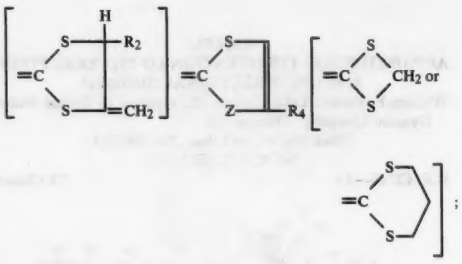
1. A method of reducing injury to crop plants due to the application thereto of thiocarbamate herbicides which comprises applying to the plant locus a safening effective amount of a compound having the formula

R—N=A

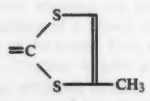
or an agriculturally acceptable acid addition salt thereof, wherein R is hydrogen, or



R_1 is hydrogen or lower alkyl; X and Y independently equal hydrogen, lower alkyl, lower alkoxy or halogen; n is 0, 1, 2 or 3; A is



R_4 is hydrogen, methyl or phenyl; Z is oxygen or sulfur; provided that when n is 1 and A is



R_1 cannot equal n-propyl or isobutyl.

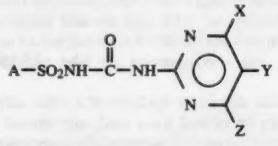
4,342,587

HERBICIDAL PYRIDINSULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 59,152, Jul. 20, 1979, abandoned. This application Mar. 14, 1980, Ser. No. 130,343
Int. Cl.[3] C07D *401/12;* A01N *43/54*
U.S. Cl. 71—92 **5 Claims**

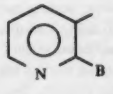
1. A compound selected from:



I

wherein

A is



B is Cl or Br;

X and Z are independently H, CH_3, Br, Cl, OCH_3, CH_2CH_3, CH_2OCH_3 or OCH_2CH_3; and

Y is F, Cl, Br, I, CH_3, CH_2CH_3, $CH_2CH_2CH_3$, $(CH_2)_3CH_3$, CH_2-CH=CH_2, OCH_3, OCH_2CH_3, CN, CH_2CH_2Cl,

$CH_2CH_2CH_2Cl$, $CH_2CH_2OCH_3$, OCH_2OCH_3, CH_2OCH_3, $OCH_2CH_2OCH_3$, $CH_2CO_2R^6$, $CH_2CH_2CO_2R^6$, CO_2R^6,

or NO;

R^6 is CH_3 or CH_2CH_3; and their agriculturally suitable salt.

4. A composition for the control of undesirable vegetation consisting essentially of an effective amount of a compound of claim 1 and at least one of (a) a surface-active agent and (b) a solid or liquid diluent.

4,342,588

WEAR RESISTANT CAST IRON

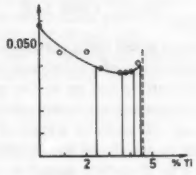
Malte Sporrong, and Lars Ramqvist, both of Nynäshamn, Sweden, assignors to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

Filed Jan. 21, 1981, Ser. No. 226,994

Claims priority, application Sweden, Jan. 25, 1980, 8000624

Int. Cl.³ C22C *38/06*

U.S. Cl. 75—124 **4 Claims**



1. Wear-resistant cast iron characterized in that it contains 3.1–3.7% carbon, 0.4–3.0% silicon, a minimum of 0.4% manganese, 1–7% chromium, 0–5% nickel, a minimum of 0.3% aluminum, and 3.7–4.2% titanium, the balance being predominantly iron.

4,342,589

PROCESS FOR PREPARING IRON COMPOUND PARTICLES FOR USE IN MAGNETIC RECORDING

Kazushi Ohshima, Yokohama; Mitsuro Matsunaga, Kamakura; Haruo Sekiguchi, Chigasaki; Kazuhiro Imaoka, Kamakura, and Fujio Hayashi, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jan. 30, 1981, Ser. No. 230,024

Claims priority, application Japan, Feb. 5, 1980, 55-11999

Int. Cl.³ C22B *5/02*; H01F *1/00*

U.S. Cl. 75—0.5 BA **5 Claims**

1. In a process for preparing α-iron for use in a magnetic recording medium which comprises reducing dried and/or sintered needle-like iron oxyhydroxide particles at 200° C. to 500° C., the improvement in which said needle-like iron oxyhydroxide particles are prepared by mechanically mixing and simultaneously cladding said needle-like iron oxyhydroxide particles with manganese and one or more than one element selected from the elements of group II of the Periodic Table at atomic weight ratios of manganese and the element or elements of Group II of the Periodic Table to iron from 0.005/100 to 10/100 and 0.001/100 to 10/100, respectively.

4,342,590

EXOTHERMIC STEEL LADLE DESULFURIZER AND METHOD FOR ITS USE

Leon A. Luyckx, 226 E. Hazelcroft Ave., New Castle, Pa. 16105

Filed Sep. 19, 1980, Ser. No. 188,968

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—58 **8 Claims**

1. A ladle desulfurization composition for desulfurizing molten steel consisting essentially of a mixture of a particulate alkaline earth oxide; a particulate metal oxide selected from the class consisting of iron oxide and manganese oxide; and a finely-divided metal selected from the class consisting of aluminum, calcium and magnesium; said mixture forming a Thermit composition which will remove sulfur when in contact with molten steel containing sulfur.

4,342,591

PROCESS FOR THE RECOVERY OF GOLD AND/OR SILVER AND POSSIBLY BISMUTH CONTAINED IN SULFURETTED ORES AND/OR SULFOARSENIDES

Marcel Lesoille, Corbais, Belgium, assignor to Mines et Produits Chimiques de Salsigne, Conques-Sur-Orbiel, France

Filed Apr. 28, 1981, Ser. No. 258,306

Claims priority, application France, Jun. 3, 1980, 80 12303

Int. Cl.³ C22B *11/04, 61/00*

U.S. Cl. 75—101 R **5 Claims**

1. In a process for recovering gold and/or silver and possibly bismuth contained in a sulfuretted ore and/or sulfoarsenide, said ore, from which is gangue has been removed according to known processes, is treated according to the following successive operations:

a reducing roasting;

an oxidising roasting;

a possible crushing;

a first lixiviation by a sulfuric acid solution containing about 20 to 120 g of acid per liter, at a temperature of about 20° to 85° C. and for a duration of 0.5 to 3 hrs.;

after separation of the solid, a lixiviation of said solid effected with the aid of a sulfuric acid thiourea solution containing from 10 to 50 g/l of thiourea, at a pH of 0.7 to 1.5, at a temperature of 20° to 70° C., for a duration of 15 mins. to 15 hrs., this lixiviation being conducted so that the potential of oxidoreduction of the medium is maintained at a value of between about 100 and about 180 mV;

and, after filtration of the solution, a cementation of said solution to recover the gold, silver and bismuth that it contains.

4,342,592

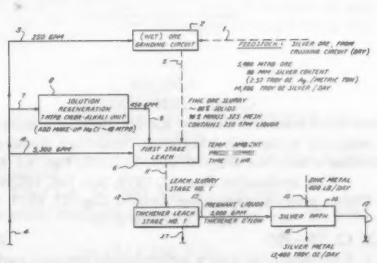
NON-POLLUTING PROCESS FOR RECOVERY OF PRECIOUS METAL VALUES FROM ORES INCLUDING THOSE CONTAINING CARBONATE MATERIALS

Frank E. Lamb, Tucson, Ariz., assignor to Duval Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 58,864, Jul. 19, 1979, abandoned. This application Aug. 1, 1980, Ser. No. 174,408

Int. Cl.³ C22B *11/06*

U.S. Cl. 75—118 R **15 Claims**



1. A cyclical hydrometallurgical process for production of a precious metal from a precious metal-containing solid material which consists essentially of:

(A) contacting the precious metal-containing material with an effective volume of a caustic leaching solution whose leachants consist essentially of an effective concentration

of a hypochlorite salt and an effective concentration of a chloride salt ion for a sufficient time to solubilize the precious metal;

(B) depositing the precious metal by displacement of the precious metal with a more electropositive metal to produce a stripped solution;

(C) adding sufficient hypochlorite to the stripped solution to maintain an effective concentration of hypochlorite salt therein; and

(D) recycling the stripped caustic solution to contact additional precious metal-containing material.

4,342,593

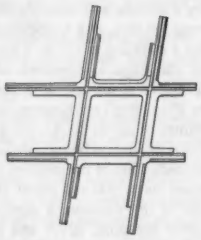
CASTINGS

Hugo R. Larson, Ridgewood; Howard S. Avery, and Henry J. Chapin, both of Mahwah, all of N.J., assignors to Abex Corporation, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,341

Int. Cl.³ C22C *38/58*; E01B *7/10*

U.S. Cl. 75—128 A **3 Claims**



1. Ferrous metal casting having a minimum yield strength of about 75,000 psi and a minimum elongation of about 30%, consisting essentially of:

C—0.85
Mn—14
Si—0.6
Cr—4
Ni—3.6
V—0.4

balance essentially iron except for impurities.

4,342,594

CEMENTED CARBIDE

Peter Ettmayer, and Richard Kieffer, both of Vienna, Austria, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Division of Ser. No. 872,926, Jan. 27, 1978, Pat. No. 4,212,671. This application Dec. 12, 1979, Ser. No. 102,963

Claims priority, application Austria, Jan. 27, 1977, 496/77

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—203 **20 Claims**

1. A method of making a molybdenum-tungsten carbonitride with the structure of tungsten carbide WC comprising heating molybdenum, tungsten and carbon in proportions sufficient for formation of the monocarbide in a nitrogen-containing atmosphere at a temperature sufficient to form the said molybdenum-tungsten carbonitride, said carbonitride having a composition between the limits $(Mo_{0.9}W_{0.1})$ (C,N) and $(Mo_{0.05}W_{0.95})$ (C,N).

4,342,595

CUBIC BORON NITRIDE AND METAL CARBIDE TOOL BIT

Romeo G. Bourdeau, Tequesta, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,253

Int. Cl.³ B22F *3/14*

U.S. Cl. 75—238 **2 Claims**

1. A tool bit comprised of a mixture of cubic boron nitride particles and metal carbide particles in a metal matrix containing both a transition metal and a sintering aid, consisting by atomic percent of 52–79 tungsten carbide, 7–36 cubic boron nitride, 9–14 cobalt, and 0.2–2.5 zirconium (by weight percent, about 85–93 tungsten carbide, 1.6–8 boron nitride, 4.7–5.0 cobalt, 0.2–2 zirconium).

4,342,596

NON-PETROLEUM BASED METAL CORROSION INHIBITOR

Alvin J. Conner, Sr., 19 Charlotte Dr., New Orleans, La. 70122

Continuation of Ser. No. 138,758, Apr. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 37,418, May 9, 1979, Pat. No. 4,233,176. This application Apr. 13, 1981, Ser. No. 253,259

Int. Cl.³ C09D *5/08*

U.S. Cl. 106—14.13 **14 Claims**

1. A non-petroleum based metal corrosion inhibiting composition consisting essentially of a solution of one part by weight of an aqueous concentrate and up to five parts by weight of water, said aqueous concentrate being a reaction mixture solution comprising, per 100 parts by weight of the concentrate:

(a) 5 to 20 parts by weight of an aliphatic, monobasic acid having from 8 to 20 carbon atoms;

(b) 0.5 to 4 parts by weight of a lubricant;

(c) an aminoalkylalkanolamine of the formula:

$$H_2NR^1—\underset{\displaystyle R^3}{\overset{\displaystyle |}{N}}—R^2—OH$$

where R^1 and R^2 are independently alkylidene of 1–4 carbon atoms, and R^3 is hydrogen or alkyl of 1–4 carbon atoms;

(d) 10 to 35 parts by weight of an aromatic mono- or polycarboxylic acid; and

(e) an amine which forms a water soluble salt with the aromatic acid,

the amount of amines (c) and (e) being an amount in slight excess of that necessary to neutralize the amounts of the aliphatic and aromatic acids.

4,342,597

COATING COMPOSITIONS FOR LINERS OF MOLTEN METAL TROUGHS AND LADLES

William F. Brown, Colony, Tex., assignor to Weston Research Corporation, Rothschild, Wis.

Filed Mar. 6, 1981, Ser. No. 241,060

The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.

Int. Cl.³ B28B *7/36*

U.S. Cl. 106—38.27 **5 Claims**

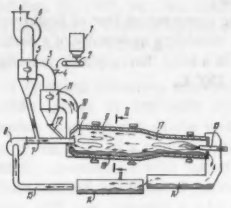
1. A composition for coating the refractory liners of ladles and troughs for handling molten metals comprising an aqueous suspension containing about 20 to about 50 weight % finely divided zirconia, about 27 to about 35 weight % colloidal silica, about 5 to about 15 weight % mica, about 5 to about 25 weight % finely divided zircon, about 0.5 to about 5 weight % bentonite, 0 to about 3 weight % of an inert coloring agent, and about 5 to about 20 weight % water.

4,342,598

METHOD AND APPARATUS FOR MANUFACTURING CEMENT CLINKER

Naum P. Kogan, ulitsa Akademka Pavlova, 140, kv. 89, Kharkov, U.S.S.R.

Filed Oct. 6, 1980, Ser. No. 194,141
Int. Cl.³ C04B 7/02
U.S. Cl. 106—100 11 Claims



1. A method of manufacturing cement clinker comprising:
(a) preheating finely divided cement raw material;
(b) injecting said cement raw material by an air flow into a rotary kiln through a charge end thereof;
(c) decarbonizing said cement raw material in suspension by a counterflow of combustion gases resulting from burning fuel at a discharge end of said kiln;
(d) withdrawing thus decarbonized material by the peripheral portion of said gas flow through said charge end of said rotary kiln;
(e) separating said decarbonized material from combustion gases;
(f) delivering said separated decarbonized material back into said rotary kiln; and
(g) burning said decarbonized material in a stirred bed within said rotary kiln.

4,342,599

METHOD OF REDUCING WATER DEMAND OF ALKALINE AQUEOUS SUSPENSIONS

William F. Mann, Westfield, and Thomas J. Smith, Springfield, both of N.J., assignors to Colloids, Inc., Newark, N.J.

Filed Mar. 18, 1981, Ser. No. 245,036
Int. Cl.³ C04B 7/02
U.S. Cl. 106—100 19 Claims

1. In the wet process for the production of cement solids wherein limestone and clay are ground in the presence of water to form a pumpable kiln feed slurry, the improvement which comprises adding to said slurry an amount of carbon dioxide sufficient to bind free cations forming insoluble carbonates therein and adding to the resulting slurry at a pH greater than 7.0, an amount of anionic polymer dispersant to adjust the viscosity of said slurry to a value suitable for pumping.

4,342,600

PROCESS FOR THE MANUFACTURE OF VISCOSES

Reinhart Mayer, Kelheim; Walter Fester, Königstein/Taunus, and Rolf Kleber, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 2, 1981, Ser. No. 222,078
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1980, 3000306
Int. Cl.³ C08B 9/00, 9/04; C08L 1/24
U.S. Cl. 106—164 6 Claims

1. In a process for the manufacture of easily filterable viscose from hemicellulose-containing cellulose pulp the improvement which comprises reacting the pulp before or during steeping with a substance which in an alkaline medium causes crosslinkage or at least blocking of the reactive groups of the hemicelluloses, and aging the alkali cellulose according to known methods, xanthating it and dissolving it subsequently to yield viscose.

4,342,601

USE OF HETEROPOLYSACCHARIDE S-119 AS A PAPER FINISH

Robert I. Yin, La Jolla, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 10, 1980, Ser. No. 168,238
Int. Cl.³ C08L 5/00; C12P 19/04
U.S. Cl. 106—209 6 Claims

1. An aqueous paper finish composition comprising:

	Parts
Pigment	100
Binding agent	5–50
Brightening agent	0–3
Dispersing agent	0–1
Alkali	0–1
Heteropolysaccharide S-119	0.1–10

said heteropolysaccharide S-119 being anionic and composed of principally carbohydrate, 2.9–3.5%, calculated as O-acetyl, O-acyl groups as the O-glycosidically linked esters, which are acetyl or succinyl or a combination thereof, 3.0–4.0% pyruvate, about 12% protein, the carbohydrate portion of which contains no uronic acid and the neutral sugars glucose and galactose in the approximate molar ratio of glucose to galactose of 7.4:1, said sugars being primarily β-linked.

4,342,602

DULLING AGENT ON THE BASIS OF WAX FOR VARNISHES, AND PROCESS FOR THE MANUFACTURE THEREOF

Karl Petz, Neusäss; Klaus Rieger, Gersthofen, and Dieter Steidl, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,244
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942487
Int. Cl.³ C08K 5/01, 5/20; C08L 91/06; C09D 7/12
U.S. Cl. 106—316 3 Claims

1. A process for the manufacture of a, wax micro-powder dulling agent for varnishes, 99% of which has a grain size distribution of less than 15 microns, which comprises subjecting a polyolefin wax having an average molecular weight of from 1,000 to 9,000 and an amide wax having a flow point/drop point of from 130° to 150° C. to common grinding in a weight ratio of from 90:10 to 10:90, wherein the amide wax is the reaction product of a fatty acid having from 12 to 34 carbon atoms and a bivalent aliphatic amine having from 2 to 6 carbon atoms.

4,342,603

CRYSTALLINE GLUCOSE AND PROCESS FOR ITS PRODUCTION

Michael J. Daniels, Reading, England, assignor to Tate & Lyle Limited, England

Filed Feb. 24, 1981, Ser. No. 237,645
Claims priority, application United Kingdom, Feb. 27, 1980, 8006661
Int. Cl.³ C13K 1/10
U.S. Cl. 127—30 13 Claims

1. A process for the production of crystalline glucose from a glucose syrup, comprising the steps of
(1) evaporating water from the glucose syrup at a pressure of less than 400 mm Hg to provide an at least 60% supersaturated solution of greater than 95% solids at a temperature of from 95° to 140° C.;

(2) subjecting the supersaturated solution to a shear force for less than 0.5 second to cause immediate nucleation of the syrup without cooling; and

(3) immediately forming the nucleated but substantially uncrystallised syrup into a quiescent layer and allowing the layer to crystallise substantially isothermally to produce solid crystalline glucose.

10. A product produced by the process of claim 1 comprising microcrystals of a mixture of α- and β-forms of glucose, at least 70% of the glucose being in the form of the β-isomer, wherein the microcrystals each have a maximum dimension of less than 50 microns.

4,342,604

PRODUCTION OF A STABLE LACTOSE PRODUCT

John W. Evans, Weed; Gary C. Young, and Charles W. Stager, both of Visalia, all of Calif., assignors to Nutrisearch Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 128,426, Mar. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 96,366, Nov. 21, 1979, abandoned. This application Oct. 7, 1980, Ser. No. 194,722

Int. Cl.³ C13K *5/00*

U.S. Cl. 127—31 16 Claims

1. A method of producing a crystallized lactose product comprising adding a food grade chelating agent to a lactose-containing permeate resulting from the ultrafiltration of whey, the amount of chelating agent added resulting in a product having a pH of not greater than 7.44 and having a lowered ash content.

4,342,605

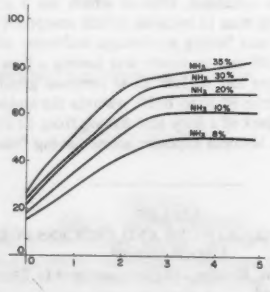
GAS SOFT-NITRIDING METHOD

Teruoki Watanabe, Kawagoe, and Shunji Kobayashi, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 54,696, Jul. 5, 1979, abandoned. This application Jan. 19, 1981, Ser. No. 225,980

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—16.6 8 Claims



1. A gas soft-nitriding method for a ferrous workpiece, comprising the step of:

heating said ferrous workpiece to a temperature of 550° C.–620° C. in a furnace into which a gas atmosphere is introduced to produce an ϵ-phase soft-nitrided layer on said ferrous workpiece; and

wherein a gas atmosphere comprising a 10–30 volume percentage of ammonia (NH_3), a 2.5–4.5 volume percentage of carbon monoxide (CO), and a substantial volume percentage of nitrogen (N_2) is initially introduced into said furnace.

4,342,606

SOLDERING COMPOSITION

John H. F. Notton, Reading, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed Apr. 1, 1980, Ser. No. 136,335

Claims priority, application United Kingdom, Apr. 6, 1979, 7912209

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—23 18 Claims

1. A soldering composition free of liquid vehicles and solid at below 40° C. consisting essentially of a particulate soldering alloy dispersed in a solid thermoplastic material melting in the range of 40° to 150° C.

4,342,607

SOLDER FLUX

Frank M. Zado, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,417

Int. Cl.³ B23K *35/36*

U.S. Cl. 148—23 20 Claims

1. A rosin free solder flux which comprises:

(a) a vehicle which is nonreactive with the portion of an electronic device to be contacted by the flux;

(b) an activator having at least one halogen atom and at least one destabilizing substituent; and

(c) a surfactant selected from the group consisting of (a″) a polycarboxylic acid, (b″) a hydroxyl substituent of (a″), (c″) a keto acid and (d″) a mixture of any of the foregoing surfactants wherein said activator is present in an amount of from 0.3 to 7 weight percent and said surfactant is present in an amount of at least one weight percent of the components (a), (b) and (c).

4,342,608

Mn-Al PERMANENT MAGNETS AND THEIR MANUFACTURE

Ronald H. Willens, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 21, 1980, Ser. No. 142,012

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—101 8 Claims

1. Method for producing a permanent magnet element which is magnetically essentially isotropic, said method comprising thermal treatment of at least one metallic body which comprises Mn and Al in a combined amount of at least 97 weight percent of said body, said body comprising Mn in the range of 70 to 76 weight percent of said amount, said body comprising less than 0.5 weight percent carbon, said thermal treatment comprising heating at an essentially constant temperature in the range of 300 to 700 degrees Celsius, said method being characterized in that

preparation of said body comprises cooling from a melt, cooling being such that throughout at least 90 percent of the volume of said body, temperature is reduced at a rate which is greater than or equal to 1000 degrees per second to a temperature at which there is no appreciable precipitation of an equilibrium phase,

whereby upon completion of said thermal treatment said magnetic element has a magnetic energy product which is greater than or equal to 1 million gauss-oersted.

4,342,609

EXPLOSION METHOD OF FINISHING WELDED JOINTS

Branislav P. Beatovic, Tome Meje No. 26; Stevan L. Kuzmanović, Moše Pijade No. 28, both of 41000 Sarajevo, Yugoslavia; Vladimir M. Kudinov, Filatova No. 1, Kiev 42, and Vladimir G. Petuškov, Jerevanska No. 14, Kiev 87, both of U.S.S.R.

Filed Jan. 23, 1980, Ser. No. 114,554
Claims priority, application Yugoslavia, Jan. 26, 1979, 178/79
Int. Cl.[3] C21D *1/00*
U.S. Cl. 148—127 2 Claims

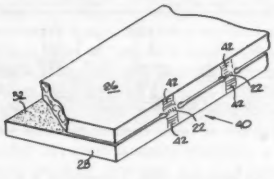
1. A method of reducing remaining tensions and corrosion resistance in welded joints by explosion finishing thereof, comprising disposing over the axis of the weld seam a main explosive charge in the form of a periodic curve, the axis of which is substantially co-extensive with that of the weld seam with the amplitude thereof extending from one side of said seam to the other, and then detonating said main explosive charge.

4,342,610

METHOD FOR INTERMITTENTLY SLITTING AND FOLDING FIBROUS INSULATION

Richard J. Ray, Jr., Littleton, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Oct. 20, 1980, Ser. No. 198,411
Int. Cl.[3] B32B *19/06*
U.S. Cl. 156—62.6 3 Claims



1. A process for the manufacture of a thick batt of fibrous material comprising the steps of:

(a) forming fibrous material,

(b) collecting said fibrous material in a blanket of substantially uniform thickness, said thickness being on the order of four or more inches,

(c) cutting said material blanket to form a plurality of individual pieces of fibrous material, intermittently slitting each piece completely thru the blanket to form two portions that are interconnected by discrete pillars of fibrous material,

(d) applying an adhesive to at least one of said interconnected fibrous portions, and

(e) folding one of said interconnected fibrous portions onto the other of said fibrous portions, at least the innermost fibers in the folded pillars being uncut and functioning as a hinge to insure proper alignment of the two portions, each of said plurality of pillars being sufficiently narrow as to enable the outermost fibers in the folded pillars to tear so as not to crimp the thusly formed thick batt.

4,342,611

METHODS OF PRODUCING STAINED GLASS EFFECTS

Helen K. Tuttle, 200 Gay Rd., North East, Pa. 16428

Filed Jan. 19, 1981, Ser. No. 226,501
Int. Cl.[3] B44F *1/06, 3/00*
U.S. Cl. 156—63 7 Claims

1. A method producing stained glass effect art work comprising the steps of:

a. moistening at least one edge of a length of glue impregnated string;

b. placing the moistened edge of said glue impregnated string on one of a glass and plastic object to permanently fix the string in place and to define the outlines of art work to be

produced so that at least each different color area is defined by a surrounding adhered fence of string on said object;

c. placing a liquid colored stain in each said defined area to provide the desired color in each area defined by said string fence; and

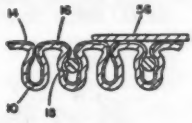
d. permitting the stain to dry.

4,342,612

METHOD OF MAKING A PREFORMED SEMIRIGID PLASTIC HOSE WRAPPED WITH A WIRE SPIRAL

James M. Lalikos, Springfield; Harold K. Waite, E. Longmeadow, and Kenneth E. Lefebvre, Hampden, all of Mass., assignors to Titeflex Corporation, Springfield, Mass.

Continuation of Ser. No. 885,389, Mar. 10, 1978, Pat. No. 4,196,031. This application Jul. 31, 1979, Ser. No. 62,546
Int. Cl.[3] B32B *1/08*
U.S. Cl. 156—143 5 Claims



1. A process for making a wire wrapped, preformed, semirigid, high vacuum or pressure polytetrafluoroethylene plastic hose, said hose having spiral convoluted inside and outside surfaces, said process comprising the steps of:

(a) drawing out a length of reinforcing steel spring wire stock;

(b) looping said wire stock around a forming device in order to form said wire into a continuous spiral coil;

(c) pulling said looped spiral wire from said forming device and through a guide for maintaining the spiral formed shape of said wire;

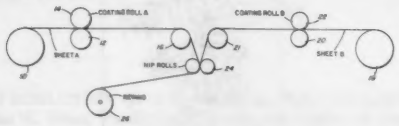
(d) taking up said wire in a valley of a preformed spiral convolution on the outside surface of said semirigid hose whereby said reinforcing wire around the outside of said hose increases its resistance to internal pressure or vacuum; and

(e) embedding said wire in the valley be deforming under heat and pressure said convolution to capture said wire and reinforce said hose and maintain its internal diameter in the presence of either pressure or vacuum.

4,342,613
METHOD OF BONDING SURFACES WITH A SOLID ADHESIVE

James N. O'Leary, 94 Newton Dr., Nashua, N.H. 03060, and Edward J. Bruzinski, 41 Stepney Rd., W. Redding, Conn. 06896

Continuation of Ser. No. 77,602, Sep. 21, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,660
Int. Cl.³ B32B 7/00
U.S. Cl. 156—310 7 Claims



1. A method for adhesively bonding surfaces which includes:

(a) applying to a first surface at least one component of a solventless reactive adhesive formulation as discrete discontinuous non-linear deposits in a predetermined pattern to form a coated surface;

(b) applying to a second surface another component of the solventless reactive formulation as discontinuous non-linear deposits in a predetermined pattern to form a coated surface, the deposits on both the first and second surface coated in such an amount and spacing that they maintain their dimensional stability until such time that the deposits on the first surface contact the deposits on the second surface;

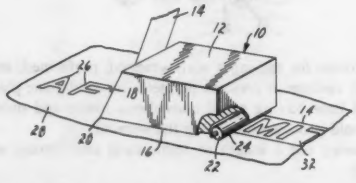
(c) mating the coated surfaces one to the other, the deposits on the first and second surfaces intimately mixing and reacting to form a continuous homogeneous film adhesive bond between the surfaces; and,

(d) curing the adhesive to form a uniform continuous bond between the surfaces.

4,342,614
PRESSURE APPLICATOR FOR GRAPHIC TRANSFER

Jan D. Vanden Bergh, Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 3, 1981, Ser. No. 240,210
Int. Cl.³ B44C 1/10, 1/16
U.S. Cl. 156—541 3 Claims



1. A hand held applicator for transferring pressure transferable graphic images from an accepting tape to a receptor surface, the accepting tape having said pressure transferable images on one surface and having an opposite surface, the applicator comprising:

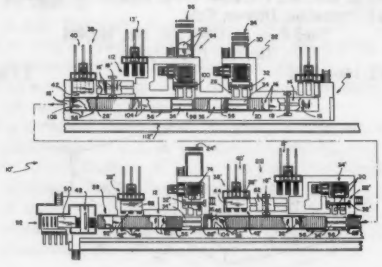
a body affording manual engagement to press and slide the applicator against said opposite surface of a said accepting tape, the body having a bottom surface and a back surface intersecting the bottom surface to define a sharp separating edge, and

a roller rotatably mounted on the front portion of the body, the axis of rotation of the roller being in parallel alignment with the separating edge, and the outer periphery of the roller projecting out from the bottom surface, so that as the applicator is pressed against the accepting tape the roller and the separating edge each form a narrow band of pressure contact with the accepting tape, and as the applicator is slid, with the roller leading the separating edge, on said opposite surface of the accepting tape with its imaged surface engaging a receptor surface, the narrow band of pressure contact from the roller initiates release of the images and maintains alignment of the accepting tape, while the subsequent pressure contact at the separating edge, together with the motion of the accepting tape around the separating edge after the applicator has passed cause the graphic images to be transferred to the receptor surface.

4,342,615
PLYWOOD LAYUP LINE

Robert L. Koch, II, Evansville, Ind., assignor to George Koch Sons, Inc., Evansville, Ind.

Continuation-in-part of Ser. No. 32,737, Apr. 24, 1979. This application Sep. 25, 1980, Ser. No. 190,585
Int. Cl.³ B32B 31/00
U.S. Cl. 156—563 16 Claims



1. A plywood assembly line, comprising a first means for conveying laminate layers through an assembly area, the first conveyor means extending longitudinally for substantially the full length of the assembly area, the first conveyor means including an entry end for introduction of plywood back sheets, and an exit end for removal of assembled plywood laminate structures, the plywood back sheets being introduced onto the entry end in end-to-end abutting relation, and the first conveyor means conveying the back sheets, additional laminate layers, and completed laminate structures at constant speed from the entry end to the exit end, a first curtain coater for coating the top side of the back sheets with a laminating adhesive, the first curtain coater positioned up line from and adjacent the entry end of the first conveyor means, second conveyor means for conveying plywood core laminate layers, the second conveyor means extending from an entry end toward an exit end adjacent the first conveyor means and positioned along the first conveyor means between the first curtain coater and the first conveyor means exit end, the second conveyor means operating at a speed at least equal to the speed of the first conveyor means, a second curtain coater for coating the top sides of the core laminate layers with a laminating adhesive, the second curtain coater positioned between the entry and exit ends of the second conveyor means, the one-side adhesive-coated core laminate layers being deposited from the exit end of the second conveyor means onto the adhesive-coated top side of the end-to-end abutting layer of back sheets moving on the first conveyor means to form a substantially end-to-end abutting layer of back sheet-core laminate layer substrate with an upwardly facing substantially continuous laminating adhesive-coated surface, third conveyor means for conveying face sheets and positioning them to be deposited on the laminating adhesive-coated top surface of the substantially

end-to-end abutting back sheet-core laminate layer substrate to form a completed plywood laminate structure, the third conveyor means extending from an entry end toward an exit end adjacent the first conveyor means, the third conveyor means positioned along the first conveyor means between the second conveyor means exit end and the first conveyor means exit end, fourth conveyor means for conveying plywood back sheets, extending from an entry end to an exit end adjacent the first conveyor means, and positioned along the first conveyor means between the third conveyor means exit end and the first conveyor means exit end, the fourth conveyor means operating at a speed at least equal to the speed of the first conveyor means, a third curtain coater for coating the top sides of the last-mentioned plywood back sheets, the third curtain coater being positioned between the entry and exit ends of the fourth conveyor means, the one-side adhesive-coated plywood back sheets being deposited from the fourth conveyor means, adhesive-coated sides up, on top of the completed plywood laminate structure, fifth conveyor means for conveying plywood core laminate layers, the fifth conveyor means extending from an entry end to an exit end adjacent the first conveyor means, the fifth conveyor means exit end being located along the first conveyor means between the exit and of the fourth conveyor means and the exit end of the first conveyor means, the fifth conveyor means operating at a speed at least equal to the speed of the first conveyor means, a fourth curtain coater for coating the top sides of the last-mentioned core laminate layers with a laminating adhesive, the fourth curtain coater being positioned between the entry and exit ends of the fifth conveyor means, the one-side adhesive-coated core laminate layers being deposited from the exit end of the fifth conveyor means onto the one-side adhesive-coated plywood back sheets deposited from the fourth conveyor means onto the completed plywood laminate structure to form, on top of the completed plywood laminate structure, a back sheet-core laminate layer substrate, sixth conveyor means for conveying plywood face sheets and positioning them to be deposited on the last-mentioned back sheet-core laminate layer substrate to form, on top of the first-mentioned complete plywood laminate structure, a second complete plywood laminate structure, the sixth conveyor means extending from an entry end to an exit end adjacent the first conveyor means, the sixth conveyor means being located along the first conveyor means between the exit end of the fifth conveyor means and the exit end of the first conveyor means.

4,342,616
TECHNIQUE FOR PREDICTING OXYGEN PRECIPITATION IN SEMICONDUCTOR WAFERS

Brian J. Elliott, Yorktown Heights; Eric W. Hearn, Wappingers Falls, and Gary Markovits, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 17, 1981, Ser. No. 235,207
Int. Cl.³ C30B *15/20*
U.S. Cl. 156—601 **4 Claims**

1. A process for characterizing semiconductor wafers, which have been cut from a crystalline body for purposes of integrated circuit manufacture, comprising the steps of:

measuring, prior to any thermal treatment, the resistivity at a plurality of sites along the diameter of the wafers;

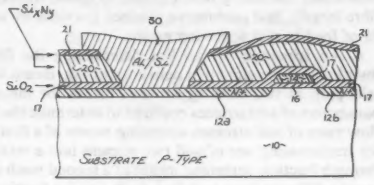
characterizing such wafers by the diametral resistivity profile thus obtained, according to which changes in oxygen preciptation can be predicted precisely where compensated intrinsic regions have been measured; and,

classifying said wafers based on the predicted oxygen precipitation characterisitcs, such that wafers having a substantially uniform diametral resistivity profile can be immediately used on a conventional production line, whereas the remaining wafers can be retained for use in accordance with their predicted individual precipitation characteristics corresponding with the measured compensated intrinsic regions.

4,342,617
PROCESS FOR FORMING OPENING HAVING TAPERED SIDES IN A PLASMA NITRIDE LAYER

Chao-Hsiang Fu, San Jose, and Sheau-Ming S. Liu, Los Altos, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 23, 1981, Ser. No. 236,833
Int. Cl.³ B44C *1/22*; C03C *15/00*; H01L *21/306*
U.S. Cl. 156—643 **6 Claims**



1. A process for forming a plasma nitride layer with an opening therethrough having tapered sides for receiving a contact member or the like, comprising the steps of:

forming a plasma nitride layer using silane and ammonia, including reducing the amount of ammonia relative to silane as the upper portion of said layer is formed to provide an upper portion of said layer which is richer in silicon than the remainder of said layer;

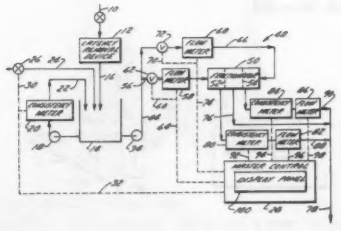
etching with a plasma etchant an opening through said plasma nitride layer such that said upper portion of said layer etches faster than said remainder of said layer, thereby providing an opening with tapered sides;

whereby contact member can be formed more readily in said opening because of said tapered sides.

4,342,618
METHOD AND APPARATUS ON-LINE MONITORING OF FIBRE LENGTH OF MECHANICAL PUMPS

Alkibiadis Karnis, 487 Montcalm Ave., Dollard des Armeaux, Quebec, Canada, and Paul M. Shallhorn, 159 Bastien, Vaudreuil, Quebec, Canada (J7V 5X9)

Continuation-in-part of Ser. No. 38,587, May 14, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,767
Int. Cl.³ D21F *7/06*; G01N *21/00*
U.S. Cl. 162—49 **7 Claims**



1. A method for on line determining the fibre length distribution by weight of a pulp comprising, feeding said pulp in two flows, measuring the required parameters of said flows to determine their fibre mass flow rates and determining the fibre mass flow rates, fractionating each of said flows by a screen into a retained and a through screen fraction, the screening means for one of said two flows having a different mesh size than the screening means for the other of said two flows, each of said mesh sizes having a retained average fibre length equivalent to a pre-determined laboratory fibre classifier retained fraction average fibre length, measuring the required parame-

ters of a selected one of said retained or through screen fractions for each of said screening means to determine their fibre mass flow rates and determining the fibre mass flow rates of said selected retained or through screened fractions, determining the laboratory fibre classifier fibre length distribution of said pulp based on: (1) said determined fibre mass flow rates, (2) said equivalent laboratory fibre classifier retained fraction average fibre length for each of said mesh sizes, and (3) a cumulative normal probability relationship for said pulp between said laboratory fibre classifier retained fraction average fibre lengths, and cumulative retained fractions by weight as a % of feed to said screening means.

4. An apparatus for on line determining the fibre length distribution by weight of a pulp comprising, means for feeding said pulp as two flowing screens, means for measuring the parameters of said streams required to determine the fibre mass flow rates of said streams, screening means of a first mesh size for fractionating one of said two streams into a retained and a through fraction, screening means of a second mesh size significantly different from said first mesh size for fractionating the other of said two streams into a second retained and through fraction, said mesh sizes each having a retained average fibre length equivalent to a pre-determined laboratory fibre classifier retained fraction average fibre length, means for measuring the required parameters of a selected one of said retained fractions and said through fractions for each of said screening means for determining their fibre mass flow rates, means for determining the fibre mass flow rates of said selected fractions, means for determining the laboratory fibre classifier fibre length distribution by weight of said pulp based on: (1) said equivalent average laboratory fibre classifier fibre length for each of said mesh sizes, (2) the fibre mass flow of said selected fractions (3), the fibre mass flow rates of said two streams, and (4) a cumulative normal probability distribution relationship for said pulp between said laboratory fibre classifier fibre lengths and cumulative retained fractions by weight as a % of feed to said screening means.

4,342,619

ADJUSTABLE PAPER MACHINE HEADBOX WITH ADJUSTMENT SENSING MEANS

Arne I. L. Gladh, Skoghall, Sweden, assignor to Billerud Uddeholm Aktiebolag, Saffle, Sweden

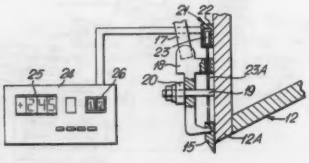
PCT No. PCT/SE78/00104, § 371 Date Aug. 8, 1979, § 102(e) Date Aug. 8, 1979, PCT Pub. No. WO79/00643, PCT Pub. Date Sep. 6, 1979

PCT Filed Dec. 27, 1978, Ser. No. 224,283

Claims priority, application Sweden, Feb. 21, 1978, 7802001

Int. Cl.³ D21F *1/02*

U.S. Cl. 162—262 **2 Claims**



1. Paper machine headbox of the type in which a slice opening running the full width of the headbox for discharging pulp stock is formed by a bottom slice lip, and a rigid top slice lip which can be raised or lowered over the full width of the headbox, said top slice lip being provided with a ruler shaped bendable profile bar running the full width of the headbox, said profile bar limiting a pulp stock discharge nozzle in the vertical direction and being locally displacable in the vertical direction by means of a plurality of adjusting assemblies distributed along the top slice lip in order to allow local adjustments of the height of the pulp stock discharge nozzle, characterized in that each adjustment assembly comprises an electrical level sensor (21) with two members, a coil (22) and a magnet core (23), which are moveable relative to each other, said magnet core (23) being mechanically attached to the profile bar with a rigid connection by means of a micro-rod, while the coil (22) is mechanically connected to the top slice lip (12) without play, said level sensor (21) being electrically connected with an indicator (24), characterized in that the indicator (24) receives the signals for all level sensors (21) and comprises means for selecting level sensors for which indications shall be performed.

4,342,620

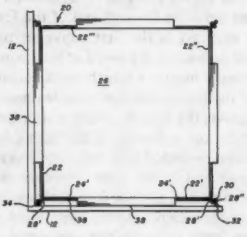
BOX INSERT FOR STORAGE OF SPENT NUCLEAR FUEL ASSEMBLY

Richard A. Vickrey, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 21, 1980, Ser. No. 142,585

Int. Cl.³ G21C *19/20*; G21F *5/00*

U.S. Cl. 376—272 **13 Claims**



1. A box to be inserted into a stationary nuclear fuel storage pool frame having a multiplicity of vertically extending polygonal openings, the box adapted for receiving a nuclear fuel assembly, comprising:

a plurality of vertically extending metal plates arranged as an open ended polygonal container having a smaller cross-sectional area than the opening in the frame;

each plate having a flat portion forming the respective sides of the container and having an integral tab portion rigidly projecting outwardly from at least one longitudinal edge of the plate;

connecting means joining each tab to a tab of an adjacent plate to form a rigid container having a plurality of outwardly projecting ribs;

whereby the box may be slidingly inserted into the frame so that the ribs fit into the corners of the frame defining the opening.

4,342,621

MOLTEN CORE CATCHER AND CONTAINMENT HEAT REMOVAL SYSTEM

Stephen J. Keating, Jr., West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 11, 1977, Ser. No. 840,588

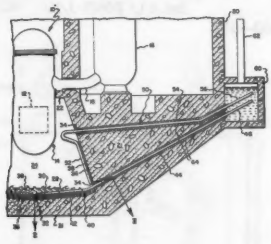
Int. Cl.³ G21C *9/00*

U.S. Cl. 376—298 **9 Claims**

1. In a nuclear reactor installation of the type having a nuclear core located within a vessel, the vessel being disposed within a chamber formed by interior walls of a hermetically sealed containment building, the chamber having at least a bottom wall and a side wall, an improved system for protecting at least the bottom wall and the lower portions of the side wall of the chamber in the event that the nuclear core melts through the vessel in a nuclear core meltdown accident, and for cooling the molten core, said improvement comprising:

means defining a shallow upwardly facing metallic basin mounted on and in intimate contact with the chamber

bottom wall, a plurality of heat pipe means, said heat pipe means each including a heat pipe having displaced evaporator and condenser sections, said evaporator sections of at least some of said heat pipes being positioned adjacent to the upper surface of said basin defining means, the some of said heat pipes which are adjacent to the basin defining means upper surface being disposed in a star-like array radiating outwardly from a point vertically aligned with the reactor core, the evaporator sections of other of said heat pipes of said heat pipe means being positioned adjacent to a portion of the surface of the side wall, said heat pipe means further including heat conducting fins attached to said heat pipe evaporator sections, said fins extending generally parallel to and being in abutting contact with the wall surfaces adjacent to their respective



heat pipes to thereby substantially completely shield said wall surfaces, said heat pipe means penetrating through and each being hermetically sealed to said containment building at a point intermediate the evaporator and condenser sections of their heat pipes whereby said heat pipes are permitted unrestrained thermally induced axial growth, said heat pipe means in the region of the condenser sections of the heat pipes being maintained in heat exchange relationship with a heat sink located to the exterior of the containment building, the evaporator section of the heat pipe of each heat pipe means including the lowest elevation between the condenser and the evaporator sections and the condenser sections of the heat pipes of said heat pipe means being disposed at an elevation higher than the elevation of said evaporator sections.

4,342,622

PROCESS FOR MAKING FORMED COKE FROM HIGH SULFUR COAL

Michael O. Holowaty, Crown Point, Ind., assignor to Inland Steel Company, Chicago, Ill.

Continuation-in-part of Ser. No. 147,916, May 8, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 237,510

Int. Cl.³ C10B *39/02, 57/00*

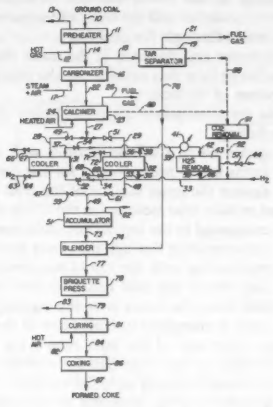
U.S. Cl. 201—6 **19 Claims**

1. In a process for making formed coke wherein sulfur-containing coal is subjected to carbonization and high temperature calcination, the resultant hot calcined char is cooled by contacting the char with a cooling gas, the cooled char is blended with a binder, and the blend is formed into briquettes which are heated to produce formed coke;

the improvement permitting the use of high sulfur coal which comprises:

introducing hot, calcined, sulfur-containing char into a cooling-desulfurization zone; and

contacting said char in said cooling-desulfurization zone at desulfurizing conditions with a reducing gas containing



predominantly hydrogen, whereby to effect concurrent cooling and desulfurization of said char.

4,342,623

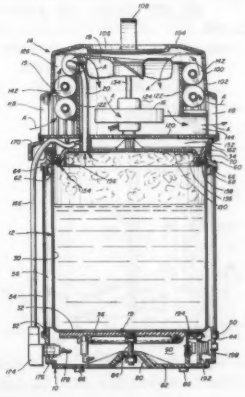
PORTABLE WATER DISTILLER

Herbert H. Loeffler, Arlington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Oct. 2, 1980, Ser. No. 193,011

Int. Cl.³ B01D *3/02*

U.S. Cl. 202—83 **2 Claims**



1. A water distiller comprising:

a container for receiving raw water and a base for supporting the container on a flat surface,

a heating plate secured to the bottom of the container for boiling raw water in the container,

a shell spaced from and surrounding the container and defining with the container an insulating chamber about the container,

a cover having a bottom wall for closing the container when the cover is mounted on the top of the container, said cover having an imperforate top wall for preventing extraneous matter from falling into it from above, said top wall being spaced from said bottom wall to define an insulating chamber above the container when said cover is on the container,

a partition mounted in the cover and spaced from the outer wall of the cover to define an outer chamber and an inner chamber in the cover,

openings in the cover sidewall communicating with the outer chamber and the inner chamber to allow air to flow in series through the chambers,

a condenser coil disposed in the outer chamber,

a discharge tube that extends out the cover connected to the bottom of the coil,

means for eliminating the requirement of a bubble catcher including:

a gasket carried in said bottom wall of said cover that forms a low pressure seal for the container by bearing against the inner surface of the wall of the container,

and an inlet tube mounted in the cover and having one end connected to the top of the condenser coil and the other end extending through the cover bottom wall and communicating with the top of the container so that steam may rise in the inlet tube and flow into the condenser coil when the cover is on the container and the heating plate is energized to boil water in the container,

said other end of the inlet tube lying above the lowest portion of the cover bottom wall so that the cover can be placed upright on a flat surface,

and a motor and fan disposed in the inner chamber of the cover for causing outside air to be drawn through the openings into the cover and over the condenser coil and motor and out the openings.

4,342,624

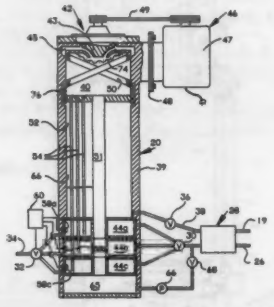
VAPOR COMPRESSION LIQUID TREATING SYSTEM

Richard Chute, Birmingham, and Ralph P. Horan, Troy, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 14,005, Feb. 21, 1979, abandoned, which is a continuation of Ser. No. 851,651, Nov. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 673,567, Apr. 5, 1976, abandoned. This application Aug. 7, 1981, Ser. No. 290,763

Int. Cl.³ B01D *1/28, 3/42*

U.S. Cl. 202—176 **4 Claims**



1. A vapor compression still for concentrating a contaminated solvent to form a concentrate suitable for recycling and a purified solvent comprising:

a. a housing enclosing an evaporation chamber;

b. a dynamic compressor disposed adjacent one end of the housing for evacuating the evaporation chamber and compressing vapor withdrawn by said compressor;

c. a plurality of concentration chambers substantially coaxially disposed at the end of the housing distal the compressor, each adapted to hold solvent to be concentrated;

d. a plurality of capillary tubes wetable by the contaminated solvent, each of said tubes having one end disposed within the solvent being concentrated within one of said concentration chambers and the other end disposed within the evacuated evaporation chamber;

e. means for directing the contaminated solvent in parallel flow to each of said concentration chambers for concentration;

f. means associated with each of said concentration chambers to selectively withdraw the concentrate;

g. means for sensing the density of the concentrate withdrawn from each of said concentration chambers; and

h. means for varying the rate at which vapor is removed from the contaminated solvent in the evaporation chamber as a function of variations in the density of concentrate withdrawn from the concentration chambers.

4,342,625

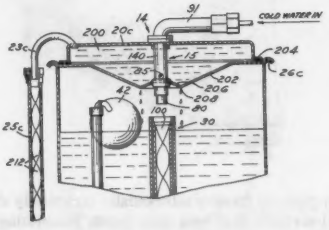
MODULAR AUTOMATIC WATER DISTILLER

Clifford C. Dennison, 440 Centenary Ave., Cleveland, Tenn. 37311

Continuation-in-part of Ser. No. 25,922, Apr. 2, 1979, abandoned. This application Sep. 19, 1980, Ser. No. 188,853

Int. Cl.³ B01D *3/02*

U.S. Cl. 202—181 **10 Claims**



1. Water distillation apparatus of a type adapted for purifying domestic tap water comprising

an evaporator chamber including means for heating water in said chamber to form steam,

enclosure means defining an enclosed volume positioned above said evaporator chamber and separated therefrom,

said enclosure means including means defining a storage reservoir in a lower portion of said enclosed volume,

heat exchange means carried by said enclosure means in an upper portion of said enclosed volume in free and unobstructed spatial communication with said lower portion of said enclosed volume including said storage reservoir,

means for feeding inlet water from said heat exchange means to said evaporator chamber including means providing a feed path for inlet water to said evaporator chamber, means for limiting entry of water into said evaporator chamber to a preselected level within said evaporator chamber and means coupled into said feed path between said heat exchange means and said evaporator chamber for discharging inlet water flowing through said heat exchange means in excess of that required to maintain said preselected level such that discharged excess inlet water flows through a defined path in said apparatus which excludes said evaporator chamber,

means providing a vapor column extending upwardly through said lower portion of said enclosed volume for directing steam from said evaporator chamber into said upper portion of said enclosed volume into the region of said heat exchange means, and

water inlet means for connecting said heat exchange means to a supply of water comprising a water control valve including means suspended within said upper portion of said enclosed volume above said vapor column and responsive to temperature of steam exiting said vapor column into said upper portion for admitting water from the said supply to said heat exchange means and thence to said evaporator chamber only when said temperature of said steam exiting said vapor column indicates operation of said heating means,

said heat exchange means being constructed and arranged to

effect heat exchange between water passing from said inlet means and steam circulating in said upper portion of said enclosed volume to preheat water passing from said inlet means to said evaporator chamber and simultaneously to condense steam on said heat exchange means for dripping by gravity as distillate into said storage reservoir.

4,342,626

COOLING DEVICE FOR COKE DRY COOLING

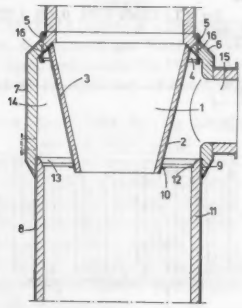
Wilhelm Jakobi, Essen; Bernhard Heinrichs, Wattenscheid, and Friedrich Jokisch, Essen, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,596

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004502

Int. Cl.³ C10B *39/02*

U.S. Cl. 202—228 **14 Claims**



1. A cooling device for coke dry cooling, comprising a housing having an upright axis and including an upper hollow part and a lower hollow part connected with one another, said upper part having an outlet opening for withdrawing a gaseous cooling medium; a separate ring-shaped insert arranged inside said upper part of said housing and being constituted of a metallic heat-resistant material, said insert having an inner surface and an upper end portion; means for protecting said insert from wear and heat and including a wear-resistant and heat-resistant coating arranged on said inner surface of said insert; means for holding said insert in said housing and including mounting means arranged to mount said upper end portion of said insert on said upper part of said housing; and means for connecting said upper part with said lower part of said housing, said connecting means including a sliding joint provided between said upper part and said lower part.

4,342,627

DEHYDRATION OF ALCOHOLS

Charles Cane, and Bertram Yeomans, both of Hull, England, assignors to BP Chemicals Limited, London, England

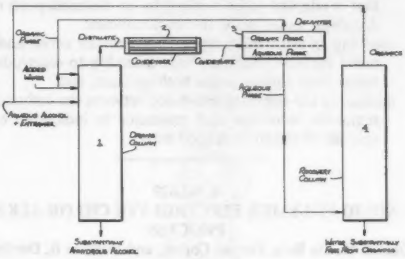
Filed Apr. 16, 1981, Ser. No. 254,740

Claims priority, application United Kingdom, Apr. 17, 1980, 8012619

Int. Cl.³ B01D *3/36*; C07C *29/82, 31/08*

U.S. Cl. 203—19 **9 Claims**

1. A continuous process for producing substantially anhydrous alcohols from aqueous solutions thereof comprising distilling a mixture of aqueous alcohol and an entrainer fed to the upper half of a drying column, withdrawing an azeotrope as an overhead distillate and continuously recovering substantially anhydrous alcohol containing not more than 0.1% by weight of water from the base of the drying column, feeding the distillate into a condenser to produce a condensate, introducing the condensate into a decanter to obtain a separation of the phases, recycling the organic hydrocarbon phase to the top of the drying column, feeding the aqueous phase into the lower half of a recovery column, recycling an overhead distillate product containing predominantly organic compounds from the recovery column to be mixed with the feed to the drying column, and removing water substantially free from organics from the base of the recovery column, characterised in that the



condensate is introduced in a substantially non-turbulent state into a decanter at a point close to the interface between the aqueous and organic phases present therein and an amount of added water not greater than 0.25 volumes per volume of the anhydrous alcohol recovered is simultaneously introduced into the drying column at a point the same as or adjacent to that at which the organic hydrocarbon phase is returned as reflux.

4,342,628

ON-BOARD DETECTION OF ANTIKNOCK COMPOUNDS IN AUTOMOTIVE GASOLINE AND APPARATUS THEREFOR

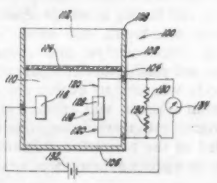
Jeffrey C. Buchholz, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 92,514, Nov. 8, 1979, abandoned, which is a division of Ser. No. 22,337, Mar. 20, 1979, Pat. No. 4,203,807. This application May 26, 1981, Ser. No. 266,727

The portion of the term of this patent subsequent to May 20, 1997, has been disclaimed.

Int. Cl.³ G01N *27/26*

U.S. Cl. 204—1 T **6 Claims**



1. In an electrolytic cell having an anode and a cathode operatively immersed in an electrolyte solution containing a metal and electrically biased to electrodeposit said metal onto the cathode, the improvement comprising a cathode for determining when the amount of electrodeposited metal exceeds a threshold amount and comprising

two metal wires, each wire insulated except at an end that is exposed to the electrolyte so that electrodeposition occurs only at the end, said wires being aligned with said ends facing and spaced apart so that metal deposition occurs onto each end in the direction of the opposite end and so that electrodeposition of the metal in the threshold amount forms a continuous deposit between said ends that is indicated by a relatively low electrical resistance measured between said wires.

4. A method for detecting a metal dissolved in an electrolyte solution and for determining whether the amount of metal exceeds a threshold amount, said method comprising

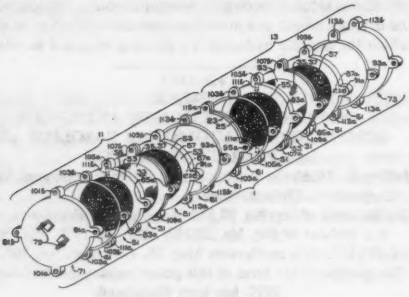
immersing an anode in the solution,
immersing a cathode assembly in the solution operatively spaced from the anode, said cathode assembly comprising two metal surfaces in facing relationship and exposed to the solution so that metal electrodeposition occurs onto each surface in the direction of the other surface, said surfaces being spaced apart by a predetermined distance that is adapted to be bridged by an electrodeposit of the dissolved metal in the threshold amount,
applying an electrical potential between the anode and both metal surfaces of the cathode assembly to electrodeposit metal from solution onto both surfaces, and
measuring the electrical resistance between the cathode wire segments, whereby said resistance is indicative of the amount of electrodeposited metal.

4,342,629

SOLID POLYMER ELECTROLYTE CHLOR-ALKALI PROCESS

Donald W. Du Bois, Corpus Christi, and William B. Darlington, Portland, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 19, 1979, Ser. No. 76,898
Int. Cl.³ C25G *1/34*
U.S. Cl. 204—98 **6 Claims**



1. In a method of electrolyzing alkali metal chloride brine to form chlorine, which method comprises feeding the brine to an electrolytic cell having an anode separated from a cathode by a permionic membrane, said anode and said cathode each comprising electrocatalyst and contacting said permionic membrane, and passing an electrical current from said anode to said cathode whereby to evolve chlorine at the anode, the improvement wherein said anode and cathode are pervious, the electrocatalysts thereof compressively bear upon but are not bonded to the permionic membrane, and the permionic membrane comprises a fluorocarbon resin having the moieties:

$$-CF_2-CXX'-$$

and

$$-CF_2-CXY-$$

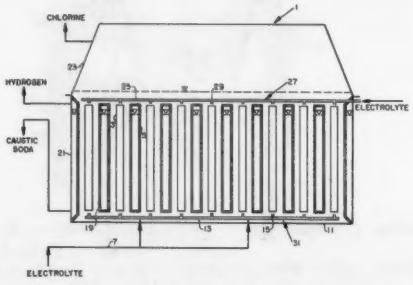
where
X is chosen from the group consisting of —F, —Cl, —H, and $-CF_3$;
X' is chosen from the group consisting of —F, —Cl, —H, $-CF_3$, and $(CF_2)_mCF$, where
m is an integer from 1 to 5;
Y is chosen from the group consisting of —A, —ϕA, —P—A, and —O—$(CF_2)_n$—(P,Q,R)—A, where P is $-CF_2-_a(CXX')_b(CF_2)_c$, Q is $(-CF_2-O-CXX')_d$ and R is $(-CXX'-O-CF_2)_e$, (P,Q,R) is or contains one or more of P, Q, and R;
n is 0 or 1;
a, b, c, d and e are integers from 0 to 6;
ϕ is a phenylene group and A is chosen from the group consisting of —COOH, —CN, —COF, —COCl, —COOR, —COOM and $-CONR_2R_3$, where R_1 is a C_1 to C_{10} alkyl group, and R_2 and R_3 are chosen from the group consisting of —H, and C_1 to C_{10} alkyl groups;
and M is chosen from the group consisting of —H and alkali metals.

4,342,630

BRINE DISTRIBUTION SYSTEM FOR ELECTROLYTIC CELLS

Wolfgang Strewe; Luciano Mose, both of Dortmund, and Bernd Strasser, Hamm, all of Fed. Rep. of Germany, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Aug. 20, 1980, Ser. No. 179,903
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1979, 2934108
Int. Cl.³ C25B *1/34, 9/00, 1/02*
U.S. Cl. 204—98 **20 Claims**



1. A method for making high purity chlorine, alkali metal hydroxide and hydrogen which comprises applying a decomposition voltage to an aqueous solution of alkali metal chloride in an electrolytic cell, said cell comprising in combination a unitary cell container having a cell base and a cell cover, said container housing a multiplicity of reaction zones wherein each zone comprises an anolyte compartment housing a metallic anode, a catholyte compartment housing a metallic cathode and a barrier separating the anolyte and catholyte compartment, said cell including a brine distribution system located in the interior of the cell non-integral with the container walls and positioned between the lower edges of the electrodes and the cell base, said brine distribution system having at least one common brine distributor manifold, said manifold equipped with multiple brine outlets located below the anolyte compartments and adapted to discharge brine below said compartments for upward movement into each of such anolyte compartments of the cell.

4,342,631

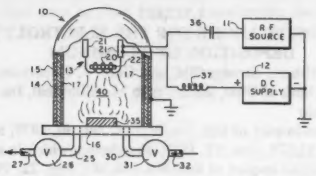
GASLESS ION PLATING PROCESS AND APPARATUS

Gerald W. White, Dallas, Tex., and Jack C. Volkers, Elgin, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Jun. 16, 1980, Ser. No. 160,045
Int. Cl.³ C23C *15/00*; B05B *5/00*; C23C *13/00*
U.S. Cl. 204—192 N **40 Claims**

1. A process for ion plating a substrate supported by a support means within a chamber with a plating material from a plating source comprising the steps of: evacuating said chamber; coupling said chamber and said support means to ground potential; applying radio frequency energy to said plating

source; developing a direct current positive bias on said plating source; and vaporizing plating material in the evacuated chamber from the plating source to create a plasma of plating ions about said substrate.



4,342,632

METHOD OF METALLIZING A CERAMIC SUBSTRATE

Werner F. Heim, Swampscott, and Hunter L. McDowell, Concord, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 1, 1981, Ser. No. 259,873
Int. Cl.[3] C23C *15/00*
U.S. Cl. 204—192 EC 6 Claims

1. Method of metallizing a ceramic substrate to provide a metallized substrate ready for brazing to metal parts without the use of brazing shims said method including the steps of:

(A) chemically cleaning the substrate,

(B) sputter etching the chemically cleaned substrate,

(C) sputtering a chromium layer of about 200 angstroms in thickness onto the substrate,

(D) sputtering a molybdenum layer of about 3500 angstroms in thickness onto the chromium layer,

(E) sputtering a copper layer of about 25,000 angstroms in thickness onto the molybdenum layer,

(F) firing the coated substrate in dry hydrogen at about 1000° C. for about 10 minutes,

(G) plating a copper-silver brazing alloy of about 0.0003 inch in thickness onto the copper layer, and

(H) firing in dry hydrogen at about 700° C. for about 10 minutes.

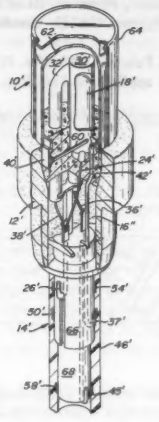
4,342,633

OXYGEN SENSOR

Omer Cure, Diepenbeek, Belgium, assignor to Electro-Nite Co., Philadelphia, Pa.

Filed Apr. 2, 1979, Ser. No. 26,142
Claims priority, application France, Apr. 6, 1978, 78 10229
Int. Cl.[3] G01N *27/58*
U.S. Cl. 204—195 S 8 Claims

1. An oxygen sensor of the immersion type for measuring the active oxygen content in a bath of molten metal comprising a measuring head adapted to fit on the end of a carrier, said head having a portion which supports an electro-chemical cell, said cell including an oxygen ion conductive solid electrolyte projecting from said head, a solid reference material juxtaposed to one surface of said oxygen ion conductive solid electrolyte, means for reducing the thermal shock to which said oxygen ion conductive solid electrolyte is subjected after initial immersion including a shield, said shield cooperating with said head to envelop said oxygen ion conductive solid electrolyte, said shield having its inner periphery juxtaposed to and in thermal contact with the opposite surface of said oxygen ion conductive solid electrolyte, said shield being constructed of a metal which melts below 2800° F. whereby the shield will be consumable by a bath of molten steel for exposing said oxygen ion conductive solid electrolyte to the bath, and a second shield supported by said head for protecting said first mentioned shield and said cell during passage through slag.

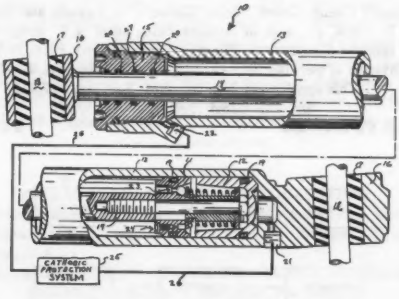


4,342,634

CONTINUITY SPRING FOR A HYDRAULIC CYLINDER

William D. Haasl, Fond du Lac, and Robert B. Weronke, Oshkosh, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Dec. 26, 1979, Ser. No. 106,589
Int. Cl.[3] C23F *13/00*
U.S. Cl. 204—197 11 Claims



1. In a hydraulic piston-cylinder for marine applications, of the type having a metal cylinder with closed ends, a piston slidably mounted in said cylinder, and a metal piston rod attached to one end of said piston and extending out one end of said cylinder, and wherein said piston rod is electrically insulated from said cylinder, the improvement comprising:

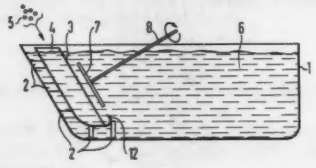
a sliding metal contact mounted between said piston rod and said cylinder to assure electrical contact therebetween as said piston rod reciprocates.

4,342,635

ANODE CASE FOR A GALVANIC BATH

Joahann Becker, Langenhagen; Hermann Koop, Gehrden, and Hans Schüeddekopf, Hanover, all of Fed. Rep. of Germany, assignors to Polygram GmbH, Hamburg, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 238,139
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010383
Int. Cl.³ C25C *7/02, 7/04;* C25D *17/04, 17/12*
U.S. Cl. 204—263 5 Claims



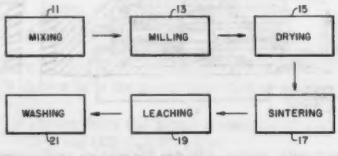
5. A galvanic bath system, comprising: container means for containing an electrolyte solution; on a side wall of the container metal support means being provided for receiving a conductive anode case in freely resting support thereon, the supporting arrangement being electrically conductive; said anode case being formed of an inner casing having apertures through which the electrolyte solution may flow, an anode bag partially surrounding the casing and comprising a material which is permeable to the electrolyte solution but impermeable to a slurry formed within the casing when pellets provided therein are at least partially dissolved by the electrolyte solution; and a contact plate means having apertures therein and which is positioned between a side wall of the anode case and the supporting arrangement, said contact plate means being attached to the anode case so as to provide a slot between the contact plate and anode case side wall into which the anode bag may be slid when enveloping the anode case with the anode bag, said contact plate means providing a low resistance contact between the anode case and the support means.

4,342,636

PROCESS FOR FORMING A POROUS POLYFLUOROALKYLENE SHEET USEFUL FOR SEPARATING ANOLYTE FROM CATHOLYTE IN ELECTROLYTIC CELLS

Eng-Pi Chang, Grand Island; Christine A. Lazarz, and Edward H. Cook, Jr., both of Niagara Falls, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Division of Ser. No. 64,615, Aug. 7, 1979, Pat. No. 4,292,146.
This application Jun. 26, 1981, Ser. No. 277,532
Int. Cl.³ C25B *13/02, 13/08, 13/04*
U.S. Cl. 204—296 6 Claims



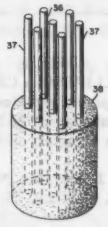
1. A method of making a porous polyfluoroalkylene sheet of improved tensile strength, suitable for use as a separator in an electrolytic cell, which comprises working a mixture of polyfluoroethylene particles, removable pore-forming particulate material and a lubricant to produce a sheet having at least one of (a) an A X-ray ratio in the range of 0.1 to 0.35 and (b) a B_1 or B_2 X-ray ratio in the range of 0.75 to 0.98, removing volatiles therefrom, sintering the polyfluoroethylene particles and removing any remaining lubricant and the pore-forming material.

4,342,637

COMPOSITE ANODE FOR THE ELECTROLYTIC DEPOSITION OF ALUMINUM

James C. Withers, Strongsville, and Gary V. Upperman, North Olmsted, both of Ohio, assignors to Metallurgical, Inc., Lakewood, Ohio

Continuation-in-part of Ser. No. 62,135, Jul. 30, 1979, and Ser. No. 52,578, Jun. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 944,987, Sep. 22, 1978, abandoned. This application Feb. 6, 1980, Ser. No. 118,972
Int. Cl.³ C25C *3/06, 3/12, 3/16, 3/24*
U.S. Cl. 204—282 23 Claims



1. An anode for use in an electrolytic cell for the electrolytic production of aluminum from a molten electrolyte salt bath at a temperature above the melting temperature of aluminum and below the temperature at which aluminum ore will substantially dissolve in the electrolyte in molten form, by an electric current at a cathode, said anode comprising in combination a stable bonded mixture of an oxygen containing compound of aluminum with an electrically conductive reducing agent in an amount sufficient to carry the anodic current into and through said anode to thereby efficiently decompose the stable mixture and release aluminum ions from the compound of aluminum solely by the anodic chemical reaction at the anode as the sole source of aluminum produced at said cathode, the stable physical bond between said compound and reducing agent constituting means confining the compound of aluminum in anodic electrical connection with said conductive means until converted by said chemical reaction at the anode wherein the anode has improved conductivity by means of a conductive member in external contact with the anode intermixture, and wherein the conductive member comprises a movable clamp assembly contacting a surface of the anode at a position near the termination of the anode in the electrolyte.

4,342,638

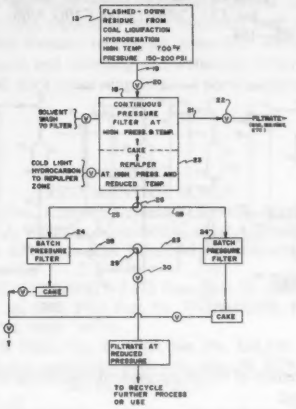
FLASHED-DOWN RESIDUE TREATMENT INCLUDING FILTERING AND SOLVENT REPULPING

Donald A. Dahlstrom, Salt Lake City, Utah, assignor to Envirotech Corporation, Menlo Park, Calif.

Continuation of Ser. No. 25,757, Apr. 2, 1979, abandoned. This application Dec. 30, 1980, Ser. No. 221,406
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—8 R 1 Claim

1. In a method for treating a flashed-down residue from a reaction zone of a coal liquifaction process which residue is a slurry of residual solids in a liquor containing dissolved hydrocarbons and is at an elevated temperature of about 700° F. and a pressure in the range from 150–200 psi, the improvement comprising feeding said slurry to a first filter zone that contains both a filter and a repulper and is maintained at substantially the same pressure and temperature as said slurry, filtering said slurry on the filter in said first zone to yield a filter cake of

solids and a filtrate, separately discharging said cake and filtrate from said filter, discharging filtrate from said filter zone, reducing the temperature of said cake by repulping it with a relatively cooler solvent in a repulper subjected to the pressure of said filter zone to yield a slurry, transferring the slurry from

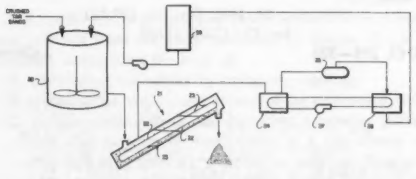

FLASHED - DOWN RESIDUE FROM COAL LIQUEFACTION HYDROGENATION
CONTINUOUS PRESSURE FILTER AT HIGH PRESS & TEMP.
CAKE
REPULPER AT HIGH PRESS AND REDUCED TEMP
BATCH PRESSURE FILTER
BATCH PRESSURE FILTER
CAKE
CAKE
FILTRATE AT REDUCED PRESSURE
TO RECYCLE FURTHER PROCESS OR USE

said repulper in said filter zone under the influence of pressure therein through a closed conduit to a second pressure filter wherein said pressure effects filtration of said slurry to yield a cake and a filtrate; and separately discharging said cake and said filtrate from said second filter to zones of substantially reduced pressure.

4,342,639
PROCESS TO SEPARATE BITUMINOUS MATERIAL FROM SAND (TAR SANDS)

Hugh W. Gagon, 3350 Florita Ave., West Valley City, Utah 84115

Filed Jul. 22, 1980, Ser. No. 171,137
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **9 Claims**



1. A method of recovering bituminous organic material from oil or tar sands, comprising the steps of:

mixing the sands containing the bituminous organic material with a halogenated organic solvent which is substantially immiscible in water, has a density greater than that of water and is capable of dissolving the bituminous organic material contained in the sands, thereby producing a slurry of solid particles suspended in a solution of bituminous organic material dissolved in the halogenated organic solvent;

continuously feeding the slurry onto a conveyor system which is at least partially submerged in water, said slurry being fed onto the portion of the conveyor which is submerged in the water;

moving the particulate sands on the conveyor while submerged in the water whereby the solution of bituminous organic material dissolved in the halogenated organic solvent separates from the particulate sands and forms a separate organic phase beneath the water phase;

moving the particulate sands upwardly on the conveyor through the surface of the water so that the sand particles are wetted essentially only by water and contain essentially no organic solvent; and

recovering the organic phase comprising the solution of bituminous organic material dissolved in the halogenated organic solvent from beneath the water phase.

4,342,640
MAGNETIC SEPARATION OF MINERAL PARTICLES FROM SHALE OIL

Robert T. Lewis, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 24, 1980, Ser. No. 210,092
Int. Cl.³ C10G *32/02;* B01D *35/06;* B03C *1/00, 1/30*
U.S. Cl. 208—11 R **18 Claims**

17. A process for separating oil shale mineral solids from retorted shale oil comprising the steps of:

(a) heating fresh oil shale particles in a retort to a retorting temperature above about 480° C. to drive off hydrocarbonaceous shale oil from said raw shale particles;

(b) removing retorted shale oil containing mineral solids from said retort;

(c) maintaining the temperature of said retorted shale oil containing mineral solids above 480° C. for no longer than about one minute; and

(d) thereafter exposing said retorted shale oil containing mineral solids to a magnetic field to cause the migration of mineral solids under the influence of said magnetic field to concentrate the solids and provide a retorted shale oil product having a reduced solids concentration.

4,342,641
MAXIMIZING JET FUEL FROM SHALE OIL

Henry E. Reif, Bryn Mawr, Pa.; Peter Maruhnic, and Michael C. Chervenak, both of Pennington, N.J., assignors to Sun Tech, Inc., Philadelphia, Pa. and Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Nov. 18, 1980, Ser. No. 208,094
Int. Cl.³ C10G *45/08, 45/60*
U.S. Cl. 208—89 **5 Claims**

1. In the process of hydrotreating crude shale oil the improvement which comprises:

(a) contacting crude shale oil at a temperature of up to about 650° F. with hydrogen and a hydrogenation catalyst comprising about 1–3 wt. % nickel and about 2–10 wt. % molybdenum; and

(b) contacting the treated oil of step (a) at a temperature in excess of about 800° F. with hydrogen and a hydrogenation catalyst having a higher metal content than the catalyst of step (a), said higher metal content catalyst comprising about 1.5–5 wt. % nickel and about 8–15 wt. % molybdenum;

whereby steps (a) and (b) produce, after fractionation, a jet fuel meeting JP-4 specifications.

4,342,642
STEAM PYROLYSIS OF HYDROCARBONS

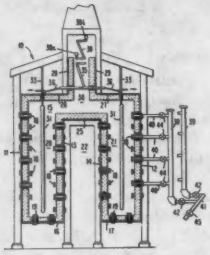
William V. Bauer, New York, N.Y., and Morgan C. Sze, Upper Montclair, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Continuation of Ser. No. 910,436, May 30, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 185,153
Int. Cl.³ C10G *9/14, 9/36;* B01J *19/24*
U.S. Cl. 208—130 **9 Claims**

1. A pyrolysis heater for the pyrolysis of hydrocarbons, comprising:

a radiant heating chamber; at least one tubular processing coil including an inlet and outlet for processing fluid in said heating chamber; a plurality of radiant burners for heating the at least one tubular processing coil, and said at least one processing coil including in at least a portion thereof an insert to provide a radiation absorption surface

within the coil, said coil interior including only said insert, said insert comprising a central portion having radially extending vanes dividing all of the interior flow cross-section of the coil in said portion into separate continuous longitudinal flow passages between the insert and interior



wall of the coil, said longitudinal flow passages providing for unimpeded flow, said insert being dimensioned to increase heat flux in said portion by at least 10 percent and to limit pressure drop increase in said portion to no greater than 5 psi.

4,342,643

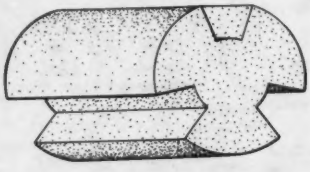
SHAPED CHANNELED CATALYST

Chwan P. Kyan, Mantua, N.J., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 199,121, Oct. 22, 1980. This application Jun. 5, 1981, Ser. No. 270,712

Int. Cl.³ C10G *35/04, 45/04*

U.S. Cl. 208—134 **28 Claims**



1. A process for converting a hydrocarbonaceous feedstock comprising contacting said feedstock under hydrocarbon conversion conditions in the presence of a bed containing shaped catalyst particles, said particles having substantially the shape of a cylinder having a plurality of longitudinal channels extending radially from the circumference of the cylinder and defining protrusions therebetween, said protrusions having maximum widths greater than the maximum widths of said channels.

4,342,644

REFORMING WITH MULTIMETALLIC CATALYSTS

Charles H. Mauldin, and William C. Baird, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 53,376, Jun. 29, 1979, Pat. No. 4,292,204. This application Apr. 22, 1981, Ser. No. 256,322

Int. Cl.³ C10G *35/06*

U.S. Cl. 208—139 **14 Claims**

1. A process for reforming a hydrocarbon feed which comprises contacting said feed at reforming conditions with a catalyst which consists of from about 0.1 to about 2 percent palladium, from about 0.1 to about 2 percent rhenium, and from about 0.01 to about 0.2 percent iridium composited with an inorganic oxide support.

4,342,645

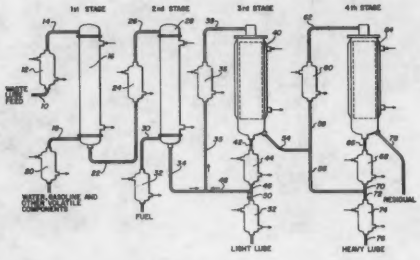
METHOD OF REREFINING USED LUBRICATING OIL

Laird C. Fletcher, Natchitoches, and Harold J. Beard, Baton Rouge, both of La., assignors to Delta Central Refining, Inc., Natchitoches, La.

Filed Oct. 28, 1980, Ser. No. 202,019

Int. Cl.³ C10M *11/00;* C10G *7/06*

U.S. Cl. 208—184 **20 Claims**



1. A method of rerefining used oil containing lubricating oil comprising:

(a) removing from the used oil a volatile forecut to provide a resulting oil containing lubricating oil; and

(b) evaporating the resulting oil in an evaporator unit at reduced pressure, greater than about 2.0 millimeters of mercury, to form heavy and light fractions, with a portion of said light fraction recycled and mixed into the resulting oil prior to the resulting oil entering the evaporator unit, in a quantity effective for lowering the vaporization temperature of the resulting oil to reduce the tendency of fouling, coking and cracking of the resulting oil during evaporation.

4,342,646

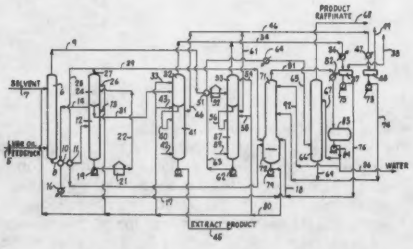
TRACE SOLVENT RECOVERY IN SELECTIVE SOLVENT EXTRACTION

Philip B. Sherman, Orange, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,421

Int. Cl.³ C10G *21/20*

U.S. Cl. 208—326 **2 Claims**



1. In a process for solvent refining a petroleum based lubricating oil stock containing aromatic and non-aromatic components wherein said lubricating oil stock is contacted with substantially water-free N-methyl-2-pyrrolidone as solvent effecting separation of said lubricating oil stock into an aromatics-rich extract fraction comprising a major portion of said solvent and an aromatics-poor raffinate fraction comprising a minor portion of said solvent, and solvent is recovered from each of said fractions by distillation and steam stripping, the improvement which comprises steam stripping said raffinate to a residual solvent content in the range of 0.1 to 1.0 weight percent,

and contacting the resulting stripped raffinate fraction with water in a water extraction step in an amount equivalent to 4 to 10 parts water by weight per part solvent contained in said stripped raffinate thereby extracting substantially all remaining solvent from said raffinate and producing a solvent-free raffinate product and wash water comprising solvent recovered from said product, separating water from said wash water by distillation and thereby recovering water-free solvent from said wash water, and returning said water-free solvent to said lubricating oil stock contacting step as a portion of the solvent therefor.

4,342,647

TREATMENT OF SCRAP

Fraser McMillan, Prahran; Graeme J. Guthrie, North Rocks, and David J. Williams, Northbridge, all of Australia, assignors to The Commonwealth Industrial Gases Limited, Surry Hills, Australia

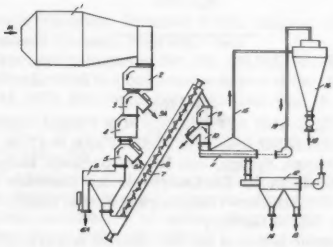
PCT No. PCT/AU80/00017, § 371 Date Nov. 26, 1980, § 102(e) Date Nov. 26, 1980, PCT Pub. No. WO80/02672, PCT Pub. Date Dec. 11, 1980

PCT Filed May 29, 1980, Ser. No. 224,576

Claims priority, application Australia, May 29, 2979, PD8991

Int. Cl.³ B03C *1/30*

U.S. Cl. 209—3 **14 Claims**



1. A method for segregating uncured rubber from a contaminant selected from the class consisting of fabrics, fibres and filaments, comprising the steps of:

A. embrittling the rubber by cryogenic cooling;

B. reducing the particle size at least of the embrittled rubber;

C. continuously during said reducing removing particles from said mixture by fluidization in a gas stream of a predetermined velocity whereby to remove particles of rubber and of contaminant having a size different from each other;

D. classifying by size said particles removed; and

E. maintaining said embrittled uncured rubber from the first step in an embrittled condition until after the fourth step.

4,342,648

DIRECT FLOTATION OF PYROCHLORE

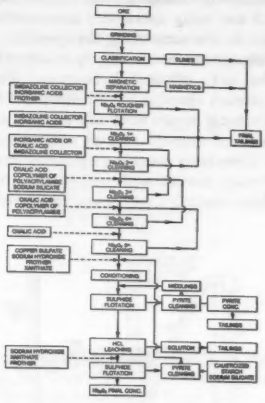
Rudy Biss, Chicoutimi Nord, and Raymond Nadeau, Dubuc, both of Canada, assignors to Les Services TMG Inc., Dubuc, Canada

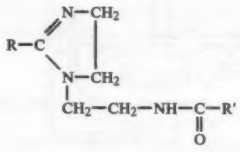
Filed May 5, 1981, Ser. No. 261,132

Int. Cl.³ B03D *1/14*

U.S. Cl. 209—166 **12 Claims**

1. Process for recovering a pyrochlore concentrate from an ore containing pyrochlore and gangue materials comprising silicates and substantial proportions of carbonates comprising: (1) subjecting an aqueous pulp of the ore to a first froth flotation in the presence of (a) a pyrochlore collector selected from the group consisting of 1-amidoethyl-2-substituted imidazolines of the formula





(I)

wherein R and R′ are independently selected from the group consisting of alkyl and alkenyl groups of 8 to 22 carbon atoms, their salts, and mixtures thereof; and (b) an acidic-reacting fluoridic compound selected from the group consisting of hydrofluoric acid, fluoride compounds, fluosilicic acid, fluosilicate compounds, and mixtures thereof in an amount sufficient to modify the pH of the pulp to an acidic pH; (2) subjecting an aqueous pulp of the froth concentrate obtained from step (1) to a second froth flotation in the presence of a further quantity of said pyrochlore collector and a further quantity of said acidic-reacting fluoridic compound in an amount sufficient to modify the pH of the pulp to an acidic pH below the pH used in step (1); steps (1) and (2) being conducted in the presence of said fluoridic compound as the sole acidifying reagent and in the absence of oxalic acid or oxalate; and (3) subsequently subjecting an aqueous pulp of material recovered as the froth concentrate from step (2) to a froth flotation in the presence of a pyrochlore collector and oxalic acid or an acidic-reacting oxalate compound and at an acidic pH below the pH used in step (2); and recovering the froth concentrate obtained from step (3).

4,342,649

UPFLOW REACTOR FILTER ASSEMBLY

Charles D. Hughes, 1045 4th St. N., Brandon, Manitoba, Canada (R7A 2N5)

Filed Feb. 17, 1981, Ser. No. 234,879

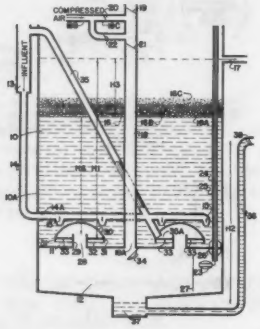
Claims priority, application United Kingdom, Mar. 3, 1980, 8007169

Int. Cl.³ B01D *41/02*

U.S. Cl. 210—108 **15 Claims**

1. An upflow reactor filter assembly for liquids containing solids and flocculents, in conjunction with a source of compressed air; said assembly comprising in combination an enclosure, said enclosure including a secondary chamber at the base thereof with a primary chamber thereabove, a substantially horizontal partition floor separating said chambers, at least one airlock situated adjacent said floor and operatively extending between said chambers and forming an air/liquid interface between said chambers, an influent conduit terminating adja-

cent to but spaced above said floor for introducing influent liquid to be treated, into said primary chamber, air control means operatively extending from said secondary chamber to said airlock and being operatively connected to the source of compressed air for controlling the operation of said airlock, sludge discharge means operatively connected to said secondary chamber and a substantially horizontal filter element spanning said primary chamber spaced above said floor and treated effluent discharge means from said primary chamber situated above said filter element, said air control means including a standpipe operatively extending upwardly from said floor and communicating therethrough with said secondary chamber, said standpipe extending above said treated effluent discharge



means, valve means adjacent the upper end of said standpipe controlling communication of said standpipe with the atmosphere and further valve means adjacent the upper end of said standpipe and below said first mentioned valve means selectively and operatively connecting said standpipe with the source of compressed air, said airlock including said floor being apertured, a tube defining said aperture and extending upwardly into said primary chamber, an inverted airlock cover component supported above and over the upper end of said tube with the lower rim of said cover component being situated at a level below the upper end of said tube and means to support said cover component in position, the air/fluid interface within said cover component being controlled by the pressure of air within said chamber during the filtering process.

4,342,650

ORGANIC SLUDGE-ENERGY RECYCLING METHOD

Lennart G. Erickson, 1070 E. Meadow Cir., Palo Alto, Calif. 94303, and Howard E. Worne, Lynon Industrial Park, Rte. 73, Berlin, N.J. 08009

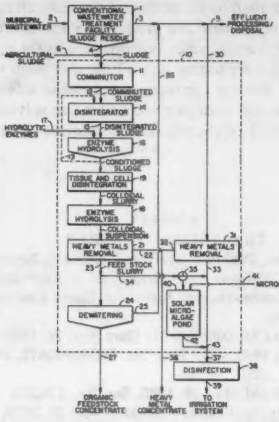
Continuation-in-part of Ser. No. 52,644, Jun. 27, 1979, Pat. No. 4,267,049, which is a continuation-in-part of Ser. No. 877,195, Feb. 13, 1978, Pat. No. 4,159,944. This application Nov. 3, 1980, Ser. No. 203,723

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.³ C02F *3/34*

U.S. Cl. 210—606 **38 Claims**

1. A method for converting substantially untreated organic sludge into a useful substance comprising the steps of disintegrating organic solids in the sludge into organic particulate matter; thereafter hydrolyzing the particulate matter in the sludge by adding thereto at least one of hydrolytic enzymes and hydrolytic enzyme-producing micro-organisms and holding the particulate matter; rupturing the hydrolyzed particu-



late matter to form a colloidal slurry and thereafter using the slurry.

4,342,651

PROCESS AND APPARATUS FOR PRODUCING STERILIZED AND BACTERIA-FREE WATER

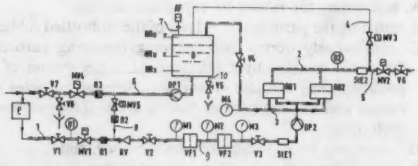
Ulrich E. Ahrens, Springe, Fed. Rep. of Germany, assignor to Blutspendedienst der Landesverbande des Deutschen Roten Kreuzes Niedersachsen Oldenburg and Remen, GmbH, Hanover, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 934,350, Aug. 17, 1978, abandoned. This application Mar. 14, 1980, Ser. No. 130,390

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739335

Int. Cl.³ B01D *31/00, 13/00*

U.S. Cl. 210—636 **19 Claims**



1. A process for producing sterilized water free of bacteria and pyrogens and suitable for medicinal injection comprising the steps of:

circulating deionized water to be sterilized into contact with a reverse osmosis non-hollow, non-fibrous filter formed of a material which is substantially impervious to attack by bacteria in the water,

passing a portion of said deionized water through said filter to obtain a sterile permeate,

recycling another portion of said deionized water from said filter,

recycling the sterile permeate which is not used to said filter, and

at least periodically sterilizing all portions of the surface of said filter with a sterilizing fluid.

4,342,652

PROCESS FOR SCALE INHIBITION IN EVAPORATIVE DESALINATION UNITS

Arthur M. Schiller, and James S. Balcerski, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 945,661, Sep. 25, 1978, abandoned. This application Jan. 22, 1981, Ser. No. 227,287

Int. Cl.³ C02F 5/10

U.S. Cl. 210—698 2 Claims

1. In a process for inhibiting scaling in evaporative desalination units comprising adding to the water to be treated an aliphatic copolymer derived from a monovinyl compound and a vinyl sulfonate, the improvement therein providing improved inhibition of magnesium hydroxide in desalination units operating at temperatures above 90° C. comprising selecting as the copolymer additive one derived from about 50 mole percent of maleic acid or anhydride and, correspondingly, from about 50 mole percent of allyl sulfonic acid, said copolymer having a molecular weight in the range of about 500 to about 10,000, adding the copolymer to the water to be treated in an amount effective to inhibit magnesium hydroxide scaling, heating the water in the desalination unit to temperatures above 90° C. and substantially inhibiting the magnesium hydroxide precipitation therein.

4,342,653

PROCESS FOR THE FLOCCULATION OF SUSPENDED SOLIDS

Frederick Halverson, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 156,145, Jun. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 12,274, Feb. 15, 1979, abandoned. This application Dec. 16, 1980, Ser. No. 216,891

Int. Cl.³ C02F 1/56

U.S. Cl. 210—734 6 Claims

1. A process for flocculating suspended solids which comprises adding to an aqueous suspension of solids selected from the group consisting of phosphate slime, uranium acid leach residue, copper acid leach residue, coal, coal refuse, and copper tailing from a flotation circuit an effective amount of a flocculant consisting essentially of a polymeric anionic flocculant wherein the polymeric anionic flocculant comprises from about 40 to about 99 mole percent of repeating units derived from acrylamide, from about 1 to about 35 mole percent of repeating units derived from 2-acrylamido-2-methylpropanesulfonic acid, and from 0 to about 25 mole percent of repeating units derived from acrylic acid, and wherein the polymeric anionic flocculant has a Brookfield viscosity of at least about 2.0 centipoises.

4,342,654

PULSATION AMPLITUDE CONTROL FOR PNEUMATICALLY PULSATED LIQUID

Jean-Luc Lambert, Fontainebleau, France, assignor to Fives-Cail Babcock, Paris, France

Filed Jun. 22, 1981, Ser. No. 275,875

Claims priority, application France, Jun. 25, 1980, 80 14080

Int. Cl.³ B01D 21/24

U.S. Cl. 210—744 8 Claims

1. A method of controlling the pulsation amplitude of air delivered into a tank containing a liquid pneumatically pulsated to separate products of different density into two superposed layers, which comprises the steps of

(a) intermittently delivering the air through an air inlet element into the tank,

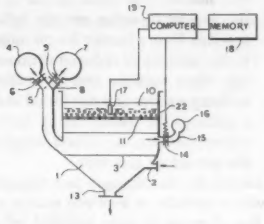
(b) programming the opening and closing of the air inlet element for the intermittent delivery of the air,

(c) storing the air inlet element opening and closing program in a memory unit generating a corresponding output signal,

(d) intermittently venting the air through a venting element,

(e) detecting the level of separation of the two layers by a level sensor emitting a control signal corresponding to the sensed level, and

(f) controlling the beginning of the venting after the complete opening of the air inlet element, the termination of



venting at the same time as the closing of the air inlet element and the duration of the venting by an output signal of a computer transmitted to the venting element, the computer having a first input receiving the control signal from the level sensor and a second input receiving the output signal from the memory unit.

4,342,655

METHOD AND APPARATUS FOR DISPERSING OIL SLICKS

Michael G. Webb, Wootton Bridge, England, assignor to The British Petroleum Company Limited, London, England

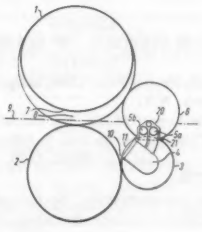
Filed May 28, 1980, Ser. No. 154,094

Claims priority, application United Kingdom, Jun. 8, 1979, 7920142

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.³ E02B 15/04

U.S. Cl. 210—749 8 Claims



1. A method for the dispersal of oil comprising the steps of

(a) deploying a barrier on water contaminated with oil to enclose, at least partially, an area containing oil, said barrier having one or more weirs in the barrier connecting the enclosed area with a gallery and at least one pump associated with each gallery,

(b) allowing oil and associated water to flow over the one or more weirs into the gallery,

(c) adding a dispersant to the oil and water by means of a distribution nozzle associated with each pump,

(d) pumping the oil and water from the gallery through at least two pumps under conditions such that an emulsion of oil, water and dispersant is formed, and

(e) discharging the emulsion into the water outside the enclosed area, said barrier including at least one section comprising

(1) a first elongate, flexible, buoyant, inflatable air chamber having a plurality of sections of reduced diameter,

(2) an elongate, flexible, inflatable ballast water chamber,

(3) an elongate, flexible, oil and water discharge tube, and
(4) a second elongate, flexible, buoyant, inflatable air chamber,

the first air chamber, the ballast water chamber, the oil and water discharge tube and the second air chamber being joined together in side-by-side relationship, the chamber and the tube being so positioned relative to one another that when in use on oil-polluted water the first air chamber and the ballast water chamber together form a barrier for oil spilled on water except in the sections of reduced diameter of the air chamber, these sections and the ballast water chamber defining a series of weirs for oil and water to pass into a gallery, the gallery being formed by the ballast water chamber, the oil and water discharge tube and the second air chamber.

4. A barrier for the recovery and dispersal of oil spilled on water, which includes at least one section comprising:
(1) a first elongate, flexible, buoyant, inflatable air chamber having a plurality of sections of reduced diameter;
(2) an elongate, flexible, inflatable ballast water chamber;
(3) an elongate, flexible oil and water discharge tube; and
(4) a second elongate, flexible, buoyant, inflatable air chamber;

the first air chamber, the ballast water chamber, the oil and water discharge tube and the second air chamber being joined together in side-by-side relationship, the chambers and the tube being so positioned relative to each other that when in use on oil polluted water the first air chamber and the ballast water chamber together form a barrier for oil spilled on water except in the sections of reduced diameter of the air chamber, these sections and the ballast water chamber defining a series of weirs for oil and water to pass into a gallery, the gallery being formed by the ballast water chamber, the oil and water discharge tube and the second air chamber; means being provided for the addition of dispersant to the oil and water and for discharging the oil, water and dispersant from the barrier.

4,342,656

PROCESS FOR DISPOSAL OF AQUEOUS LIPOIDAL WASTES

Thomas J. Walsh, Pepper Pike, Ohio, assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 903,485, May 8, 1978, abandoned. This application Jun. 5, 1981, Ser. No. 271,012
Int. Cl.³ F23G *7/00*
U.S. Cl. 210—770 **3 Claims**

1. A process for recovering the fuel value of a normally unburnable lipoidal waste and disposing of said waste wherein said lipoidal waste comprises waste lipids and water, and is the waste product of a process selected from the group consisting of: refining of fats, refining of oils, fat rendering, tall oil recovery, tall oil refining, alkali refining of lipids and saponification of lipids, comprising the steps of:
(a) separating said lipoidal waste from a portion of the waste water to produce a concentrated lipoidal waste which is about 30–70% waste lipids, the remainder being predominantly waste water in a complex emulsion from with the waste lipids;
(b) mixing said concentrated lipoidal waste with fuel oil to form a combustible mixture; and
(c) burning said mixture;

said lipoidal waste containing indigenous surface tension lowering materials selected from the group consisting of saponifiable materials, unsaponifiable materials, acids, and soaps which facilitate said mixing, said mixing producing a state of subdivision effective for substantially complete dispersion of the lipoidal waste in the fuel oil until combustion.

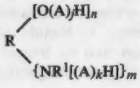
4,342,657

METHOD FOR BREAKING PETROLEUM EMULSIONS AND THE LIKE USING THIN FILM SPREADING AGENTS COMPRISING A POLYETHER POLYOL

Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

Filed Oct. 5, 1979, Ser. No. 82,363
The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.
Int. Cl.³ B01D *17/04*; E21B *43/22, 43/24*
U.S. Cl. 252—8.55 D **54 Claims**

1. A method for breaking petroleum emulsions of the water-in-oil type characterized by subjecting the emulsion to the action of a homogeneous micellar solution of a thin film spreading agent, comprising: (1) from between about 5% and about 75% by weight of a polyether polyol having the formula:

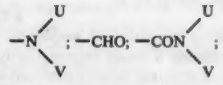


wherein:
A is an alkylene oxide group, $—C_iH_{2i}O—$;
O is oxygen;
i is a positive integer from 2 to about 10;
j is a positive integer no greater than about 100;
k is a positive integer no greater than about 100;
N is nitrogen;
R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or $[A_LH]$;
L is a positive integer no greater than about 100;
R is a hydrocarbon moiety of a polyol, a primary or secondary amine, a primary or secondary polyamine, a primary or secondary amino alcohol, or hydrogen; and
m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen,

said polyether polyol at about 25° C.: (a) being less than about 1% by volume soluble in water and in isooctane; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface between distilled water and refined mineral oil to form a film having a thickness no greater than about 20 Angstroms at a spreading pressure of about 16 dynes per cm; (2) from between about 2% and about 30% by weight of a hydrotropic agent having one of the formulas:

$$X—Z \qquad (A)$$

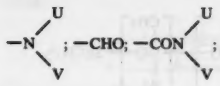
wherein X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 13 carbon atoms; and wherein Z is one of: —OH;



—COOH, and $—OCH_3$; and U and V are hydrogen or hydrocarbon substituents;

$$X—Y—R—(Z)_n, \qquad (B)$$

wherein:
Z is one of —OH;



—COOH; and —OCH_3;

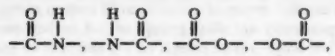
X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 12 carbon atoms;

R is a member selected from the class consisting of, —CH_2—, —C_2H_4—, C_3H_5=, —C_3H_6, and —C_2H_4—O—C_2H_4—;

n is either a one or two integer, the integer dependent upon the selection of R;

U and V are hydrogen or hydrocarbon substituents; and

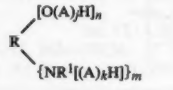
Y is a member selected from the class consisting of:



—O—, and —S—;

(3) from between about 2% and about 30% by weight of an amphipathic agent having at least one radical having from between about 10 and about 64 carbon atoms per molecule; and (4) from between about 15% and about 90% by weight, water.

26. A method of recovering oil from an oil-bearing formation into which a well bore extends, comprising the steps of: (I) generating steam at the surface; (II) supplying said steam to said oil-bearing formation by way of said well bore; (III) supplying a homogeneous micellar solution of a thin film spreading agent to said oil-bearing formation to inhibit the production of oil-water emulsion as a result of the interaction of said steam with the oil and water in the formation, said micellar solution comprising: (1) from between about 5% and about 75% by weight of a polyether polyol having the formula:



wherein:

A is an alkylene oxide group, —$C_iH_{2i}O$—;

O is oxygen;

i is a positive integer from 2 to about 10;

j is a positive integer no greater than about 100;

k is a positive integer no greater than about 100;

N is nitrogen;

R^1 is one of hydrogen, a monovalent hydrocarbon group containing less than about C_{11}, or $[A_LH]$;

L is a positive integer no greater than about 100;

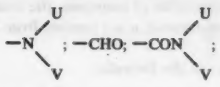
R is a hydrocarbon moiety of a polyol, a primary or secondary amine, a primary or secondary polyamine, a primary or secondary amino alcohol, or hydrogen; and

m+n is no greater than about 4 when R is other than hydrogen and one of m and n is zero and the other is unity when R is hydrogen,

said polyether polyol at about 25° C.: (a) being less than about 1% by volume soluble in water and in isooctane; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface between distilled water and refined mineral oil to form a film having a thickness no greater than about 20 Angstroms at a film pressure of about 16 dynes per cm; (2) from between about 2% and about 30% by weight of a hydrotropic agent having one of the formulas:

X—Z (A)

wherein X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 13 carbon atoms; and wherein Z is one of: —OH;

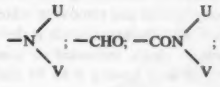


—COOH; and —OCH_3; and U and V are hydrogen or hydrocarbon substituents;

X—Y—R—$(Z)_n$, (B)

wherein;

Z is one of —OH;



—COOH; and —OCH_3;

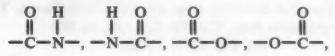
X is an alkyl, alicyclic, aromatic, alkylalicyclic, alkylaryl, arylalkyl, alicyclicalkyl, heterocyclic or substituted heterocyclic radical having 2 to 12 carbon atoms;

R is a member selected from the class consisting of, —CH_2—, —C_2H_4—, C_3H_5=, —C_3H_6, and —C_2H_4—O—C_2H_4—;

n is either a one or two integer; the integer dependent upon the selection of R;

U and V are hydrogen or hydrocarbon substituents; and

Y is a member selected from the class consisting of:



—O—, and —S—;

(3) from between about 2% and about 30% by weight of an amphipathic agent having at least one radical having from between about 10 and about 64 carbon atoms per molecule; (4) from between about 15% and about 90% by weight, water; and (IV) recovering from said formation oil and water which was subjected to the action of said steam.

4,342,658

WATER-BASED HYDRAULIC FLUID CONTAINING AN ALKYL DIALKANOLAMIDE

Cline A. Tincher, Grosse Ile, and Jerrold F. Maxwell, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

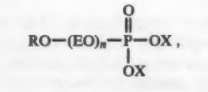
Filed Nov. 24, 1980, Ser. No. 209,817

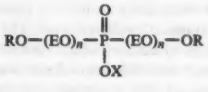
Int. Cl.³ C10M *1/44*

U.S. Cl. 252—32.5 **11 Claims**

1. A composition useful as a hydraulic fluid or metalworking fluid consisting essentially of water in a major proportion and minor effective lubricating amounts of:

(A) a phosphate ester salt selected from the group consisting of

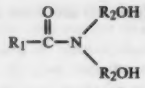




and mixtures thereof wherein EO is ethylene oxide; R is

an alkylaryl group wherein the alkyl group thereof has about 4 to about 20 carbon atoms; X is individually selected from the group consisting of an alkali metal, an alkaline earth metal, the residue of ammonia, the residue of an amine, and mixtures thereof; n is a number from 1 to 50,

(B) an alkyldialkanolamide of the formula:



wherein R_1 is alkyl of about 4 to about 54 carbon atoms and R_2 is alkyl of about 2 to about 6 carbon atoms, or an alkyldialkanolamide prepared by esterifying a dialkanolamine with an alkyl carboxylic acid and removing water of esterification wherein said alkyldialkanolamide is derived from a branched or straight chain, saturated or unsaturated aliphatic dicarboxylic acid having 8 to 54 carbon atoms.

7. The process of metalworking comprising working metal in the presence of the composition of claim 1.

8. The process for transmitting force hydraulically comprising transmitting force utilizing the composition of claim 1.

4,342,659
VIDEO DISC LUBRICANTS

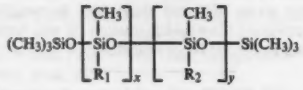
Chih C. Wang, Hightstown; Lincoln Ekstrom, Princeton; Thomas C. Lausman, Cranbury, all of N.J., and Henry Wielicki, Wyndmoor, Pa., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 937,819, Aug. 29, 1978, abandoned. This application Aug. 9, 1979, Ser. No. 65,064

Int. Cl.³ C07F *7/08*

U.S. Cl. 252—49.6 **8 Claims**

1. A lubricant composition for a video disc comprising a methyl alkyl siloxane fraction of the formula



wherein R_1 and R_2 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x+y is 4 or less, said fraction having a distillation temperature of about 100°–205° C. at a pressure of 10^{-5} torr and wherein said composition is free of antioxidant.

4,342,660
HIGH DENSITY INFORMATION DISC LUBRICANTS

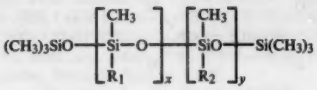
David A. Berry, Columbus; Joseph R. Preston, Radnor, and Louis J. Hillenbrand, Columbus, all of Ohio, assignors to RCA Corporation, New York, N.Y.

Filed Jun. 12, 1981, Ser. No. 272,946

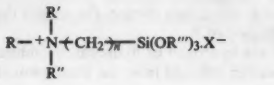
Int. Cl.³ C10M *1/50, 1/16, 1/20*

U.S. Cl. 252—49.6 **6 Claims**

1. In a high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record coated with a methyl alkyl siloxane lubricant having the formula



wherein R_1 and R_2 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2 and wherein the sum of x plus y is 4 or less, the improvement which comprises adding to said lubricant an alkyl-substituted(trialkoxysilyl)alkyl quaternary ammonium salt of the formula



wherein R is an alkyl group of about 12 to 20 carbon atoms; R′ and R″ independently are alkyl groups of 1–8 carbon atoms; R‴ is methyl or ethyl; n is an integer of 1–3 and X is an anion.

4,342,661
HEAT STORAGE MEDIUM

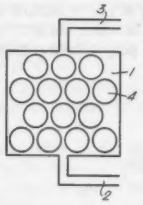
Jörn Ehlers, Uetersen, and Helmut Haukelt, Hamburg, both of Fed. Rep. of Germany, assignors to The British Petroleum Company Limited, London, England

Filed Jun. 3, 1981, Ser. No. 269,811

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1980, 3020983

Int. Cl.³ C09K *5/06*

U.S. Cl. 252—70 **3 Claims**



1. A heat storage medium containing (a) sodium hydroxide in concentration from 60% by weight up to and including the stoichiometric concentration in sodium hydroxide monohydrate, (b) water in concentration from 40% by weight down to and including the said stoichiometric concentration and (c) 0.1 to 2.0% by weight of tellurium dioxide, all percentages being expressed as percentages by weight of the combined weight of sodium hydroxide and water.

4,342,662
GETTER DEVICE

Sakae Kimura, Tokyo; Masahiro Shimura, Yokohama, and Tadatake Okai, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 27, 1980, Ser. No. 201,198

Claims priority, application Japan, Oct. 25, 1979, 54-137001; May 21, 1980, 55-66424

Int. Cl.³ H01J *7/18*

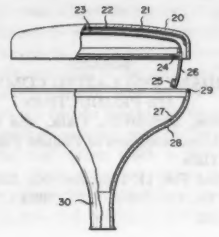
U.S. Cl. 252—181.4 **4 Claims**

1. A getter device comprising a metal getter container,

a getter material filled in said getter container comprising a barium-aluminum alloy and a nickel powder, and

a gas-impermeable film covering at least the exposed surface of the getter material and comprising at least one boron compound selected from the group consisting of boric

anhydride, orthoboric acid, metaboric acid, and tetraboric acid.



2. A getter device according to claim 1 wherein the gas-impermeable film contains less than 5% by weight of silicon oxide.

4,342,663

USE OF MIXTURE OF ALIPHATIC C_{10} BRANCHED OLEFINS IN AUGMENTING OR ENHANCING THE AROMA OF ARTICLES SUBJECTED TO ACTION OF AQUEOUS HYPOCHLORITES

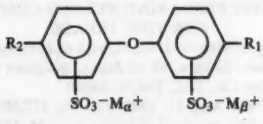
Richard M. Boden, Monmouth Beach; Lambert Dekker, Wykoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 188,576, Sep. 18, 1980, Pat. No. 4,303,555, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application Feb. 5, 1981, Ser. No. 231,771

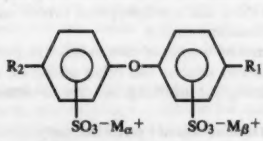
Int. Cl.³ C11D *7/54, 3/395, 3/50*

U.S. Cl. 252—186.36 **5 Claims**

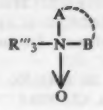
1. An aqueous alkali metal hypochlorite solution comprising as a sole detergent a composition of matter selected from the group consisting of (1) at least one substance defined according to the structure:



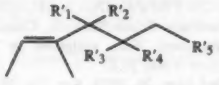
wherein at least one of R_1 and R_2 is C_{10}–C_{12} straight chain or branched chain alkyl; when one of R_1 or R_2 is C_{10}–C_{12} straight chain or branched chain alkyl the other of R_1 or R_2 is hydrogen; wherein M_α and M_β are the same or different and each represents alkali metal consisting of sodium, potassium and lithium and (2) a mixture comprising a material having the structure:



and intimately admixed therewith a substance having the structure:



wherein R_3''' is straight chain alkyl; wherein more than 55% of the R_3''' moieties consist of straight chain alkyl having from 11 up to 13 carbon atoms and wherein A and B are each separately methyl or, taken together, complete a morpholine ring; and from 0.02% up to 0.2% of one or more diisoamylene-containing compositions produced by the step of reacting 2 moles of diisoamylene in the presence of an acid catalyst whereby a mixture of compounds is formed which mixture consists essentially of compounds defined according to the generic structure:



wherein R'_1, R'_2, R'_3, R'_4 and R'_5 are the same or different and each represents hydrogen or methyl with the provisos that (i) the sum total of the carbon atoms in R'_1, R'_2, R'_3, R'_4 and R'_5 is 3; and (ii) R'_1, and R'_2 represents hydrogen when R'_5 represents methyl; and (iii) when either R'_1 or R'_2 is methyl, R'_5 is hydrogen; said diisoamylene being capable of imparting to said alkali metal hypochlorite solution or to a article to which the said alkali metal hypochlorite solution is applied, a woody, piney, herbaceous aroma, said hypochlorite solution having a pH of 11 up to 14.0.

4,342,664

MOLTEN METAL FILTER

James C. Blome, Florissant, Mo., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 83,193, Oct. 9, 1979, Pat. No. 4,265,659. This application May 23, 1980, Ser. No. 152,598

Int. Cl.³ B01J *13/00;* **C04B** *35/12, 35/24*

U.S. Cl. 252—313 R **2 Claims**

1. An aqueous slurry for use in preparing a high temperature resistant ceramic foam having the following composition: 40 to 95% Al_2O_3; 1 to 25% Cr_2O_3; 0.1 to 12% bentonite; 2.5 to 25% of an air setting agent which is substantially nonreactive to the molten metal and up to 5% by weight ceramic fibers.

4,342,665

AQUEOUS GEL COMPOSITIONS

Hiroyuki Itoh, and Hirosuke Imai, both of Yokohama, Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed Jan. 26, 1978, Ser. No. 872,431

Claims priority, application Japan, Jan. 26, 1977, 52-6761

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—316 **2 Claims**

1. Aqueous gel compositions comprising as the essential components (a) from 0.1 to 10% by weight of one or more surface active agents selected from the group consisting of anionic and nonionic surface active agents, (b) from 0.1 to 10% by weight of a water soluble salt of a copolymer of a diene and maleic acid or a maleic acid derivative, (c) from 0.01 to 1% by weight of calcium ion and (d) water, the cation portion of said water soluble salt being a member selected from the group consisting of sodium, potassium, lithium, magnesium, ammonium and amine.

4,342,666
ENHANCEMENT OF TRILITHIUM PHOSPHATE CATALYST ACTIVITY

Donald Hardy, Sr., Levittown, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Apr. 20, 1981, Ser. No. 255,611
Int. Cl.³ B01J *27/18*
U.S. Cl. 252—437 **10 Claims**

1. A method for enhancing the activity of a trilithium phosphate isomerization catalyst which comprises contacting dry trilithium phosphate catalyst with an aqueous solution containing a mineral acid selected from the group consisting of H_3PO_4, HCl, H_2SO_4 and HNO_3, separating the acid-treated catalyst from the aqueous solution and drying the activated catalyst, wherein the amount of acid in the aqueous solution is adjusted so as to maintain the pH of the solution in equilibrated contact with the catalyst at a value of from 9 to 11.

4,342,667
PROCESS FOR PREPARING A SILVER CATALYST

William D. Armstrong, South Norwalk, Conn., and Charles N. Winnick, Ridgewood, N.J., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,575
Int. Cl.³ B01J *23/04, 23/50*
U.S. Cl. 252—476 **1 Claim**

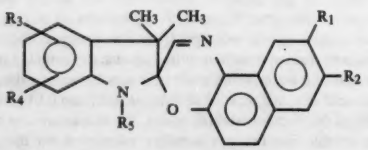
1. A process for preparing a catalyst useful in the oxidation by molecular oxygen of ethylene to ethylene oxide comprising:
(a) impregnating a support with a solution of a silver salt selected from the group consisting of silver acetate, silver benzoate, silver oxalate, silver lactate, silver malonate, silver succinate, silver glutarate, and silver maleate and comprising at least one non-nitrogenous reducing agent selected from the group consisting of alcohols, polyols, and keto alcohols at a temperature at or below 110° C.;
(b) activating and drying said impregnated support of (a) at a temperature not below 85° C. or in excess of 200° C. for a sufficient time to permit substantially all of the silver in the impregnated solution to be deposited on said support and leaving decomposable residues on said support;
(c) removing at least 85% of said residues of (b) from said activated support (b) by washing said support with a solvent;
(d) thereafter post-impregnating the catalyst of (c) with a solution of a compound of one or more alkali metals selected from the group consisting of cesium, rubidium, and potassium and thereafter drying said post-impregnated catalyst.

4,342,668
PHOTOCHROMIC COMPOUNDS

Richard J. Hovey, Sturbridge; Nori Y. C. Chu, Southbridge; Peter G. Piusz, Brimfield, all of Mass., and Charles H. Fuchsman, Bemidji, Minn., assignors to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of Ser. No. 940,535, Sep. 8, 1978, Pat. No. 4,215,010. This application Jul. 28, 1980, Ser. No. 172,910
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.
Int. Cl.³ G02B *5/23, 1/04;* C07D *265/38*
U.S. Cl. 252—586 **9 Claims**

1. A compound having the formula:

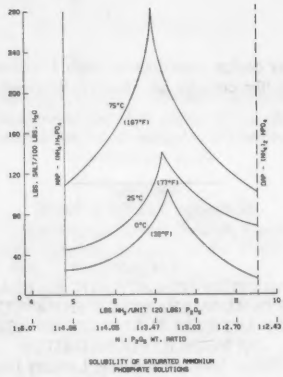


wherein one of R_1 and R_2 is halogen or lower alkoxy, and the other is hydrogen, R_3 and R_4 are hydrogen, lower alkyl, lower alkoxy, or halogen and R_5 is an alkyl radical having 2 to 10 carbons.

4,342,669
FIRE-RETARDANT INSULATING COMPOSITION AND ITS PRODUCTION

Joseph F. Wilson, Bartlesville, Okla., and Robert S. Parish, Broomfield, Colo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 11, 1980, Ser. No. 120,434
Int. Cl.³ C09K *3/28;* C09D *5/18*
U.S. Cl. 252—602 **4 Claims**



1. A method for producing a fire retardant insulating composition comprising incorporating into a cellulose-base insulating material a phosphate composition consisting essentially of an amount of monoammonium phosphate (MAP) sufficient to provide fire retardance, said phosphate composition having polyphosphate content in the range of about 3 to about 8 weight percent thereby producing a non-tacky, fire retardant insulating composition.

4. A fire retardant insulating composition produced by the method of claim 1, 2, or 3.

4,342,670
PROCESS FOR PREPARING RUBBER COMPOSITIONS FOR TIRE TREADS

Asahiro Ahagon; Makoto Misawa, both of Hiratsuka, and Hiroshi Hirakawa, Isehara, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,689
Claims priority, application Japan, Aug. 24, 1979, 54-107083
Int. Cl.³ C08J *3/00*
U.S. Cl. 523—353 **3 Claims**

1. In a process for preparing a rubber composition for tire treads by incorporating 100 parts by weight of the total of rubber material consisting of:
(1) at least one member selected from halogenated butyl rubbers,
(2) at least one member selected from the group consisting of natural rubber and a polyisoprene rubber and
(3) a polybutadiene rubber
with 40–70 parts by weight of carbon black and with a vulcanization accelerator, sulphur and other additives, and then mechanically mixing the resulting mixture to obtain the rubber composition,
the process characterized by mechanically mixing in the first mixing step 40–70 parts by weight of the rubber material containing at least one member selected from the group consisting of the halogenated butyl rubber (1) and the

polybutadiene rubber (3), in an amount of at least 50% by weight of the total of the rubbers (1) and (3) with the proviso that, in cases where the amount of said at least one member contained in said rubber material is less than 40–70 parts by weight, the rubber (2) is added in such an amount that the amounts of the rubbers (1), (2) and (3) total 40–70 parts by weight, with at least 90% by weight of the total of the carbon black and then mechanically mixing the resulting mixture with the remainder of the rubber material and carbon black in the second mixing step thereby to obtain a desired rubber composition for producing therefrom tire treads having low rolling resistance and high wet skid resistance with acceptable wear resistance.

4,342,671

SOMATOSTATIN ANALOGUES

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 54,545, Jul. 5, 1979. This application Feb. 19, 1980, Ser. No. 122,327

Int. Cl.³ C08L *37/00*

U.S. Cl. 525—54.11 **3 Claims**

1. A compound of the formula:

R-[Y_2]$_n$-Cys(R^1)-X_4(R^2)-X_5(R^3)-Phe-X_7(R^4)-X_8-Lys(R^5)-Thr(R^6)-Phe-Thr(R^7)-Ser(R^8)-Cys(R^9)-O-CH_2[polystyrene resin support]

in which

R is hydrogen, an α-amino protecting group, lower alkanoyl or benzoyl;

R^1 and R^9 are a thio protecting group;

R^2 is a protecting group for N^g of Arg, or the N^{im} of His;

R^3 is a protecting group for N^{im} of His or the hydroxyl group of Tyr;

R^4 is a protecting group for the 1H indole nitrogen of Trp, the N^{im} of His, or the hydroxyl group of Tyr;

R^5 is an amino protecting group;

R^6 is a hydroxyl protecting group for Thr;

R^7 and R^8 are a hydroxyl protecting group for Thr and Ser;

where

Y_2 is Ala-Gly, Ala-D-Ala- or Gly-Gly-Gly;

n is 0 or 1;

X_4 is Arg, His, D-Arg, or D-His;

X_5 is His, Tyr, Glu, D-His, D-Tyr, or D-Glu;

X_7 is Trp, Tyr, Met, or His;

and

X_8 is Trp or D-Trp.

4,342,672

USE OF HETEROPOLYSACCHARIDE S-156 IN LATEX PAINT

Thomas A. Lindroth, Spring Valley, and Philip E. Winston, Jr., San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 5, 1980, Ser. No. 184,500

Int. Cl.³ C08L *5/00;* **C09D** *3/10*

U.S. Cl. 524—29 **9 Claims**

1. A water base paint comprising binder, pigment, and an aqueous vehicle for said binder and pigment, and 0.1 to 1% (based on total weight of said paint) heteropolysaccharide S-156.

6. In a process for preparing a water base paint comprising binder, pigment, and an aqueous vehicle for said binder and pigment, the improvement which comprises incorporating into said paint 0.1 to 1% (based on total weight of said paint) Heteropolysaccharide S-156 or dialdehyde-treated Heteropolysaccharide S-156.

4,342,673

HIGH-SOLIDS COATING COMPOSITIONS

Austin A. Wolfrey, Peabody, Mass., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 120,861, Feb. 12, 1980. This application Feb. 2, 1981, Ser. No. 230,890

Int. Cl.³ C08L *63/04*

U.S. Cl. 523—427 **6 Claims**

1. A pigmented, high-solids content, curable composition comprising

(a) an epoxidic prepolymer or prepolymer blend comprising
  (i) a diglycidyl ether of cyclohexanedimethanol,
  (ii) a diglycidyl ether of bisphenol-A,
  (iii) a polyepoxidized phenol or cresol novolak,
  (iv) a polyglycidyl ether of a polyhydric alcohol,
  (v) an epoxidic ester having two epoxycycloalkyl groups, or
  (vi) a mixture of any of the foregoing; and

(b) from 0.5 to 35 parts by weight per 100 parts by weight of (a) and (b) combined of a catalyst consisting essentially of
  (i) diphenyliodonium hexafluorophosphate, and
  (ii) from 0.01 parts to 10 parts, per part of (i), of a copper salt; and
  (iii) from 0.1 to 10 parts, per part of (i) and (ii) combined, of a tin salt; and

(c) from 10 to 100 parts by weight, per 100 parts by weight of (a) and (b) of a pigment.

4,342,674

HIGH SOLIDS COATING FOR RUSTY STEELS

Roger E. Morgan, Piscataway, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 22, 1981, Ser. No. 256,431

Int. Cl.³ C08L *91/06*

U.S. Cl. 523—177 **9 Claims**

1. A two-component coating composition

wherein: Component A contains a polyglycidyl ether of a bisphenol having an epoxy equivalent weight between about 170 and about 200 diluted with between about 10 weight percent and about 20 weight percent of butyl glycidyl ether; an organic wax; a liquid polyglycidyl ether of a bisphenol having an epoxy equivalent weight between about 170 and about 210; a coumarone-indene resin having a softening point between about 40° F. and about 60° F.; a urea-formaldehyde resin; leafing aluminum paste; and 2-nitropropane; and

Component B contains a polyamide having a base number between about 300 and about 360; N-oleyl-1,3-propylenediamine oleate; a coumarone-indene resin having a softening point between about 40° F. and about 60° F.; an organic wax; microcrystalline silica; and 2,4,6-tris-(dimethylaminomethyl) phenol.

4,342,675

PROCESS FOR PREPARING AQUEOUS DISPERSION OF POLYTETRAFLUOROETHYLENE

Subhash V. Gangal, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 16, 1978, Ser. No. 916,844

Int. Cl.³ C08L *23/00*

U.S. Cl. 524—762 **4 Claims**

1. A process for producing an aqueous dispersion of polytetrafluoroethylene which comprises polymerizing tetrafluoroethylene in an aqueous medium at a temperature of between about 60° C. and 120° C. and at a pressure of between about 30 and 1000 psi (2.1 to 70 kg/cm^2), in which

(a) disuccinic acid peroxide and an inorganic persulfate present in a weight ratio of peroxide to persulfate of between about 55:1 and about 10:1 is charged to the aqueous medium prior to initiation of polymerization, sufficient disuccinic acid peroxide being added to result in about 100 to 550 ppm disuccinic acid peroxide in the aqueous medium;

(b) a nonionic hydrocarbon surfactant and substantially nontelogenic anionic surfactant which is present in a weight ratio of hydrocarbon surfactant to anionic surfactant of between about 1:30 and about 1:150 is added to the aqueous medium prior to initiation of polymerization, sufficient hydrocarbon surfactant being added to result in about 10 to 40 ppm hydrocarbon surfactant in the aqueous medium; and

(c) after at least about 4% polymer solids has formed based on weight of polymerization mixture and before 20% of polymer solids has formed, a mixture of between about 100 to 350% disuccinic acid peroxide based on the amount of disuccinic acid peroxide employed in part (a), and between about 100 and 300% anionic surfactant based on the amount of anionic surfactant employed in part (b), is added to the polymerization medium.

4,342,676

METHOD FOR PRODUCING LATICES OF COPOLYMERS OF BUTYL ACRYLATE AND 1-METHACRYLATE-1-TERT-BUTYL PEROXY ETHANE

Sergei S. Ivanchev, ulitsa Nalichnaya, 36/3, kv. 97; Valery N. Pavljuchenko, prospekt Energetikov, 34, kv. 53; Zinaida M. Pessina, ulitsa Pskovskaya, 6, kv. 12, and Elena D. Vasilieva, prospekt Lunacharskogo, 110, kv. 324, all of Leningrad, U.S.S.R.

PCT No. PCT/SU79/00016, § 371 Date Nov. 13, 1980, § 102(e) Date Nov. 10, 1980, PCT Pub. No. WO80/01917, PCT Pub. Date Sep. 18, 1980

PCT Filed Mar. 13, 1979, Ser. No. 216,994

Int. Cl.³ C08L *00/00*

U.S. Cl. 524—458 2 Claims

1. A method for producing latices of copolymers of butyl acrylate and 1-methacrylate-1-tert-butyl peroxy ethane by emulsion copolymerization of butyl acrylate and 1-methacrylate-1-tert-butyl peroxy ethane in the presence of an initiating redox system, characterized in that the copolymerization is carried out through prepolymerization of butyl acrylate up to a conversion degree of 90–100% followed by introduction of 1-methacrylate-1-tert-butyl peroxy ethane into the reaction mass, potassium persulfate and sodium metabisulfite being used as the initiating redox system.

4,342,677

FLUOROCOMPLEX SALT-CONTAINING LIQUID FOR SETTING DENTAL CEMENTS

Hiroaki Muramatsu, Gotenba; Kentaro Tomioka, Chofu; Kazuo Hirota, Tokyo, and Shoji Akahane, both of Tokyo, all of Japan, assignors to G-C Dental Industrial Corp., Tokyo, Japan

Filed May 14, 1981, Ser. No. 263,589

Claims priority, application Japan, Jun. 4, 1980, 55-74408

Int. Cl.³ C08K *3/30*

U.S. Cl. 523—116 5 Claims

1. A liquid for setting dental cements comprising an aqueous solution of 45 to 55% by weight of a copolymer of acrylic acid and maleic acid containing tartaric acid and one or more fluorocomplex salts in amounts of 0.1 to 5% on the basis of the total weight.

4,342,678

GLASS-REINFORCED POLYESTER MOULDING COMPOUNDS

Lothar Buxbaum, Lindenfels, and Franz Breitenfellner, Bensheim, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 9, 1980, Ser. No. 167,179

Claims priority, application Switzerland, Jul. 17, 1979, 6631/79

Int. Cl.³ C08K *7/14*; C08L *67/02*

U.S. Cl. 524—539 3 Claims

1. A moulding compound which consists essentially of

(a) from 40 to 98% by weight, based on said moulding compound, of a polyester or copolyester which is from 90 to 100 mol % of a polyester derived from 1,4-butanediol and trans-1,4-cyclohexanedicarboxylic acid or polyester forming derivative thereof; and from 10 to 0 mol % of a polyester derived from an alkane diol of 2 to 8 carbon atoms or cyclohexane-1,4-dimethanol; and a dicarboxylic acid (or polyester forming derivative thereof) selected from the group consisting of azelaic acid, sebacic acid, succinic acid, dodecanedicarboxylic acid, cis-1,4-cyclohexanedicarboxylic acid, terephthalic acid and isophthalic acid, and

(b) from 2 to 60% by weight, based on said moulding compound, of glass fibers.

4,342,679

WEAR-RESISTANT SINTERED COMPOSITION HAVING AN EMPIRICAL FORMULA $CF_{1.3}$ COMPRISING GRAPHITE FIBERS, FLUONNATED GRAPHITE, AND PTFE

Louis Abrahams, Worcester, and Thomas P. J. Izod, Holliston, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Aug. 27, 1980, Ser. No. 181,909

Int. Cl.³ C08K *7/02*

U.S. Cl. 524—401 2 Claims

1. A sintered substantially non-oxidized composition having the empirically derived formula of about $CF_{1.3}$, said composition being prepared from a mixture consisting essentially of 74–84% by weight polytetrafluoroethylene, 7–17% graphite fibers, and 4–14% fluorinated graphite.

4,342,680

STABILIZED OXYMETHYLENE COPOLYMER COMPOSITION

Akitoshi Sugio, Ohmiya; Akira Amemiya; Masaharu Kimura, both of Tokyo; Yoshiharu Otuki, Kawaguchi, and Kiyokazu Kawaguchi, Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Mar. 20, 1980, Ser. No. 132,165

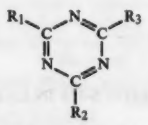
Claims priority, application Japan, Jul. 24, 1979, 54-94075

Int. Cl.³ C08K *3/22, 5/13, 5/34*

U.S. Cl. 524—100 6 Claims

1. A stabilized oxymethylene copolymer composition comprising an oxymethylene copolymer, and incorporated therein a stabilizer system consisting essentially of:

(1) 0.01 to 7 parts by weight, based on 100 parts by weight of the oxymethylene copolymer, of at least one aminesubstituted triazine of the following formula



(A)

wherein R_1, R_2 and R_3 represent a hydrogen atom, a halogen atom, a hydroxyl group, an alkyl group, an alkoxy group, an aryl group, a hydrogenated aryl group, an amino group or a hydroxymethylated amino group, and at least one of them is an amino group or a hydroxymethylated amino group,

(2) 0.0[illegible] to 5 parts by weight, based on 100 parts by weight of the oxymethylene copolymer, of at least one sterically hindered phenol (B) selected from the group consisting of 2,2'-methylenebis (4-methyl-6-t-butylphenol), distearyl-3,5-di-t-butyl-4-hydroxybenzyl phosphonate, 2,6,7-trioxa-1-phosphabicyclo[2.2.2]-oxy-4-yl-methyl-3,5-di-t-butyl-4-hydroxy-hydrocinnamate, 1-(3,5-di-t-butyl-4-hydroxyphenyl)-3,5-distearyl-thiotriazylamine, 2(2'-hydroxy-3',5'-di-t-butylphenyl)-5-chlorobenzotriazole, 2,6-di-t-butyl-4-

methylphenol, 1,3,5-trimethyl-2,4,6-tris (3,5-di-t-butyl-4-hydroxybenzyl) benzene, 4,4'-methylene-bis (2,6-di-t-butylphenol), 3,5-di-t-butyl-4-hydroxybenzyl-dimethylamine and N,N'-hexamethylenebis(3,5-di-t-butyl-4-hydroxy-hydrocinnamide), and

(3) 0.004 to 5 parts by weight, based on 100 parts by weight of the oxymethylene copolymer, of at least one metal-containing compound (C) selected from the group consisting of hydroxides of an alkali metal which is sodium or potassium or an alkaline earth metal which is magnesium, calcium or barium.

4,342,681

USE OF ORGANIC SILICON COMPOUNDS IN COMBINATION WITH OXETANE COMPOUNDS, DIOXANES OR TETRAHYDROFURANES FOR STABILIZING AND BRIGHTENING POLYCARBONATES WHICH ARE FREE FROM PHOSPHITES AND FREE FROM BORIC ACID ESTERS

Karsten Idel, Krefeld; Wolfgang Cohnen, Leverkusen, and Dieter Freitag, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,622

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920451

Int. Cl.³ C08K *5/15, 5/54*

U.S. Cl. 524—108 **14 Claims**

1. A polycarbonate composition comprising polycarbonate resin prepared by a solution process characterized in the absence therefrom of phosphites and boric acid esters and, a stabilizing and brightening agent comprising 0.01 to 1.0 percent by weight of said composition comprising components

(i) an organic silicon compound of the general formula:

$$(R_1)_a\text{—Si—}(OR_2)_b$$

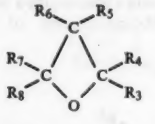
wherein

a+b=4, b is 1 to 4, R_1 is H, C_1–C_{18} alkyl, C_2–C_{18}-alkenyl C_6–C_{24} aralkyl and

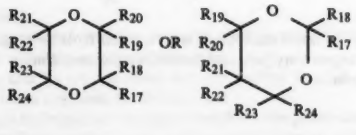
R_2 is C_1–C_{18}-alkyl, C_2–C_{18} alkenyl, C_5–C_{10}-cycloalkyl or C_7–C_{24}-aralkyl and

(ii) one or more members of the group consisting of

(a) oxetane compounds having the general formula:

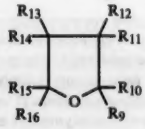


(b) dioxane compounds having the general formula:



and

(c) tetrahydrofurane compounds having the general formula:



wherein R_3 to R_{24} can be the same or different and may be H, C_1–C_{18} alkyl, C_5–C_{12} cycloalkyl, C_6–C_{15}-aryl, C_7–C_{15} aralkyl, C_7–C_{15} alkaryl, C_1–C_{18}-hydroxyalkyl, C_2–C_{18}-alkoxyalkyl, (C_6–C_{15}-aryl)oxymethyl, and (C_7–C_{15}-aralkyl)-oxymethyl and for said (b) and (c) R_9 to R_{24} may additionally be monoacyloxymethyl.

4,342,682

INTUMESCENT FLAME RETARDANT THERMOPLASTIC POLYURETHANE ELASTOMER COMPOSITIONS

Yuval Halpern, Skokie, and Donald D. Hall, Jr., Prospect Heights, both of Ill., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Sep. 18, 1981, Ser. No. 303,688

Int. Cl.³ C08K *5/52*

U.S. Cl. 523—179 **5 Claims**

1. Thermoplastic polyurethane elastomer compositions comprising (a) a thermoplastic polyurethane elastomer, (b) a flame retarding amount of an intumescent additive selected from the group consisting of melammonium pentate, the pentate salt of ammelide, and mixtures thereof, and (c) a polyol.

4,342,683

AZO DYES WITH CARBOXYL POLYALKYLENEOXY CHAIN MOIETY

Henning Reel, Cologne; Winfried Kruckenberg, and Karl H. Schündehütte, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

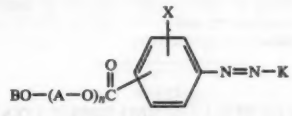
Continuation of Ser. No. 967,431, Dec. 7, 1978, abandoned. This application Jul. 2, 1980, Ser. No. 196,519

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 2755022

Int. Cl.³ C09B *29/36*

U.S. Cl. 260—156 **8 Claims**

1. An azo dyestuff of the formula



(I)

wherein

X denotes hydrogen, nitro or $COOR_1$,

B denotes R or acyl,

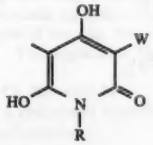
R denotes hydrogen, alkyl, cycloalkyl, alkenyl, aryl or aralkyl,

R_1 denotes alkyl or cycloalkyl,

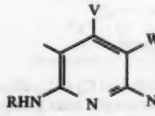
A denotes alkylene.

n denotes the numbers 3–8 and

K denotes a coupling component from the series

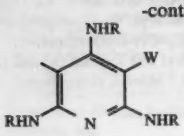


(a)



(b) or

-continued



(c)

R—independently of one another—has the abovementioned meaning,
V represents hydrogen or methyl and
W represents CN, COOR or CONHR, and
the alkyl, cycloalkyl, alkenyl, aryl, alkylene and acyl radicals mentioned above in any context can contain further non-ionic substituents customary in azo chemistry or can contain the radical COOH.

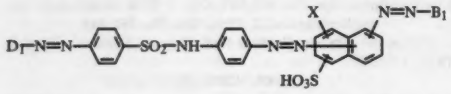
4,342,684

HYDROSOLUBLE PYRAZOLONE TRISAZO DYESTUFFS DERIVED FROM 4,4'-DIAMINO-BENZENESULFANILIDE

Pierre Frank, and Andre L. Sailer, both of Saint Clair du Rhone, France, assignors to P C U K Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Continuation of Ser. No. 541,956, Jan. 17, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,897
Claims priority, application France, Jan. 22, 1974, 74 02017
Int. Cl.³ C09B *33/22, 35/32, 35/38;* D06P *3/32*
U.S. Cl. 260—159 **1 Claim**

1. A dyestuff which in the free acid state is represented by the formula:



wherein
X is hydrogen or hydroxy;
B_1 is the residue of hydroxylated benzene or naphthalene coupling component; and
D_1 is the residue of a pyrazolone.

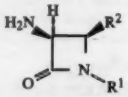
4,342,685

INVERSION OF THE 3 α-AMINO GROUP ATTACHED TO THE β-LACTAM RING

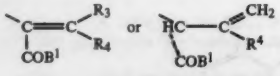
Wataru Nagata, Nishinomiya, and Tsutomu Aoki, Sennan, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 28, 1980, Ser. No. 136,073
Claims priority, application Japan, Apr. 3, 1979, 54-40624
Int. Cl.³ C07D *705/08, 498/04;* C07B *29/00*
U.S. Cl. 260—239 A **5 Claims**

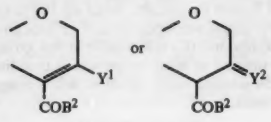
1. A process for the preparation of a 3β-amino-4β-substituted-2-azetidinone of the formula



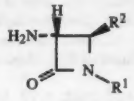
wherein R^1 is a group of the formula



in which R^3 and R^4 are the same or different C_1 to C_3 alkyl and COB^1 is carboxy or a conventional carboxylic ester group, and R^2 is C_2 to C_4 alkenyloxy, C_2 to C_4 alkynyloxy, C_1 to C_4 alkanoyloxy or C_1 to C_4 alkylthio, or R^1 and R^2 taken together represent a group of the formula



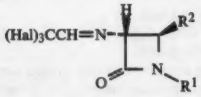
wherein Y^1 is hydrogen, halogen, C_1 to C_7 alkoxy or C_1 to C_7 alkyl which is unsubstituted or monosubstituted by halogen, acetoxy or 1-methyl-tetrazol-5-yl-thio, Y^2 is C_1 to C_2 alkylidene, and COB^2 is carboxy or a conventional carboxylic ester group, which comprises condensing a 3α-amino-4β-substituted-2-azetidinone of the formula



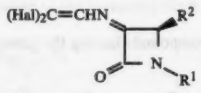
wherein R^1 and R^2 are as previously defined, with a trihalogenoacetaldehyde of the formula

$(Hal)_3CCHO$

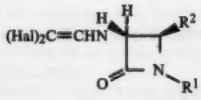
wherein Hal is chloro, bromo or iodo, to form a 3α-(2,2,2-trihalogenoethylidene)amino-4β-substituted-2-azetidinone of the formula



treating the thus formed compound with a base to give a 3-(2,2-dihalogenovinyl)imino-4β-substituted-2-azetidinone of the formula



reducing the latter compound with a metal hydride to give a 3β-(2-halogenovinyl)amino-4β-substituted-2-azetidinone of the formula



and hydrolyzing the latter compound with aqueous acid to yield the 3β-amino-4β-substituted-2-azetidinone compound, wherein the conventional carboxylic ester group is diphenyl methyl ester, 2,2,2-trichloroethyl ester, p-nitrobenzyl ester, p-methoxybenzyl ester, phthalidyl ester, acetoxymethyl ester, pivaloyloxymethyl ester, t-butyl ester, phenyl ester, or indanyl ester.

4,342,686

INTERMEDIATES FOR PREPARING 6-LOWER ALKYL-7,8-DIHYDROXY-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

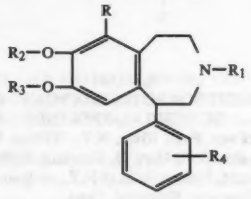
Charles K. Brush, Malvern, and Joseph Weinstock, Phoenixville, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 972,296, Dec. 22, 1978, Pat. No. 4,265,889, which is a continuation-in-part of Ser. No. 903,325, May 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 852,404, Nov. 17, 1977, Pat. No. 4,165,372. This application Nov. 13, 1980, Ser. No. 206,428

Int. Cl.³ C07D *223/16;* A61K *31/55*

U.S. Cl. 260—239 BB 10 Claims

1. A compound of the structural formula:



in which:

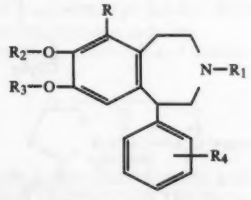
R is lower alkyl of 1–6 carbons;

R_4 is hydrogen or one substituent from the group consisting of trifluoromethyl, halo, methyl, methoxy, alkanoyloxy of 2–5 carbons, hydroxy or methylthio;

R_2 and R_3 are the same and are hydrogen, lower alkyl of 1–5 carbons, lower alkanoyl of 2–5 carbons, benzyl or, when taken together, methylene; and

R_1 is benzyl, phenethyl, lower alkanoyl of 1–5 carbons or, when R_2 and R_3 are other than hydrogen or alkanoyl, hydrogen; or pharmaceutically acceptable acid addition salts thereof.

5. A compound of the formula:



in which:

R is a α-hydroxyalkyl or α-chloroalkyl of 1–6 carbons;

R_1 is hydrogen, formyl or methyl;

R_2 and R_3 are the same and are methyl, benzyl or, when taken together, methylene; and

R_4 is hydrogen or one substituent from the group comprising trifluoromethyl, halo, methyl, methylthio or methoxy; or pharmaceutically acceptable acid addition salts thereof.

4,342,687

N-SUBSTITUTED PERHYDRODIOXAZEPINES USEFUL AS POLYURETHANE CATALYSTS

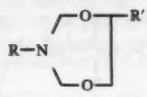
Robert L. Zimmerman, and Edward E. McEntire, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 8, 1981, Ser. No. 300,405

Int. Cl.³ C07D *413/06, 273/01*

U.S. Cl. 260—243.3 4 Claims

1. A composition of matter having the formula



where R is a tertiary amino alkyl radical and R′ is hydrogen or lower alkyl.

4,342,688

PROCESS FOR THE MANUFACTURE OF AN N-HYDROXYALKYLCARBAZOLE

Horst Tappe, Dietzenbach, Fed. Rep. of Germany, assignor to Cassella Aktiengesellschaft, Frankfurt (M) Fechenheim, Fed. Rep. of Germany

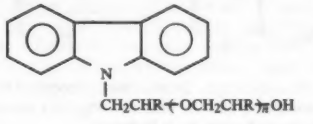
Filed Mar. 18, 1981, Ser. No. 244,910

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1980, 3011808

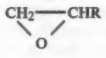
Int. Cl.³ C07D *209/86*

U.S. Cl. 260—315 10 Claims

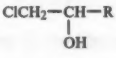
1. The process for manufacturer of an N-hydroxyalkylcarbazole of the formula



wherein R is H, CH_3 or C_2H_5 and n is a number from 0 to 4 which comprises reacting carbazole with an epoxide of the formula



or a chlorhydrin of the formula



at temperatures from 20° to 150° C. in the presence of a base and a phase transfer catalyst, in an organic solvent which is immiscible with water.

4,342,689

ω-HETEROAROYL(PROPIONYL OR BUTYRYL)-L-PROLINES

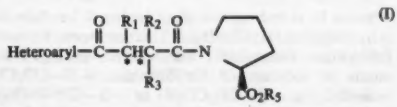
Francis J. McEvoy, Pearl River, N.Y.; William B. Wright, Jr., Woodcliff Lake, N.J.; Gary H. Birnberg, Spring Valley, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 144,741, Apr. 28, 1980, Pat. No. 4,299,769. This application Mar. 11, 1981, Ser. No. 242,765

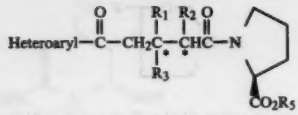
Int. Cl.³ C07D *405/06*

U.S. Cl. 260—326.34 10 Claims

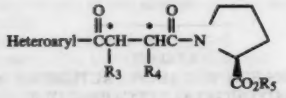
1. A compound selected from the group consisting of those of the formulae:



-continued

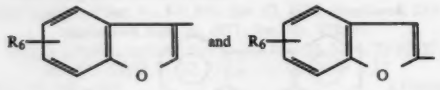


(II)



(III)

wherein R_1 is hydrogen or alkyl having 1–3 carbon atoms; R_2 is hydrogen or alkyl having 1–3 carbon atoms; R_3 is mercapto, formylthio, benzoylthio, alkanoylthio having 2–4 carbon atoms or moieties of the formulae: $-S-CO_2CH_2C_6H_5$, $-S-CO_2R_5$, $-S-CH_2CO_2R_5$ or $-S-CO-N(R_5)2$; R_4 is hydrogen or alkyl having 1–4 carbon atoms; R_5 is hydrogen or alkyl having 1–4 carbon atoms; and Heteroaryl is selected from the group consisting of moieties of the formulae:



wherein R_6 is hydrogen, fluoro, chloro, bromo or alkyl having 1–4 carbon atoms; and the pharmacologically acceptable cationic salts thereof when R_5 is hydrogen.

4,342,690

ω-HETEROAROYL(PROPIONYL OR BUTYRYL)-L-PROLINES

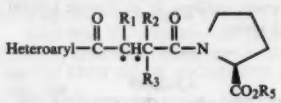
Francis J. McEvoy, Pearl River, N.Y.; William B. Wright, Jr., Woodcliff Lake, N.J.; Gary H. Birnberg, Spring Valley, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 144,741, Apr. 28, 1980, Pat. No. 4,299,769. This application Mar. 11, 1981, Ser. No. 242,770

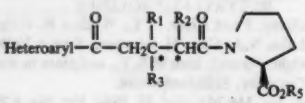
Int. Cl.³ C07D *409/06*

U.S. Cl. 260—326.34 **10 Claims**

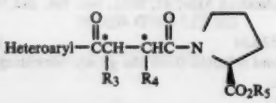
1. A compound selected from the group consisting of those of the formula:



(I)

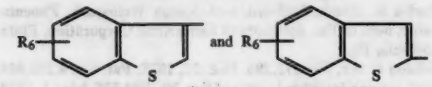


(II)



(III)

wherein R_1 is hydrogen or alkyl having 1–3 carbon atoms; R_2 is hydrogen or alkyl having 1–3 carbon atoms; R_3 is mercapto, formylthio, benzoylthio, alkanoylthio having 2–4 carbon atoms or moieties of the formulae; $-S-CO_2CH_2C_6H_5$, $-S-CO_2R_5$, $-S-CH_2CO_2R_5$ or $-S-CO-N(R_5)_2$; R_4 is hydrogen or alkyl having 1–4 carbon atoms; R_5 is hydrogen or alkyl having 1–4 carbon atoms; and Heteroaryl is selected from the group consisting of moieties of the formulae:



wherein R_6 is hydrogen, fluoro, chloro, bromo or alkyl having 1–4 carbon atoms; and the pharmacologically acceptable cationic salts thereof when R_5 is hydrogen.

4,342,691

ω-HETEROAROYL(PROPIONYL OR BUTYRYL)-L-PROLINES

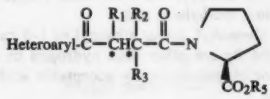
Francis J. McEvoy, Pearl River, N.Y.; William B. Wright, Jr., Woodcliff Lake, N.J.; Gary H. Birnberg, Spring Valley, and Jay D. Albright, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 144,741, Apr. 28, 1980, Pat. No. 4,299,769. This application Mar. 11, 1981, Ser. No. 242,781

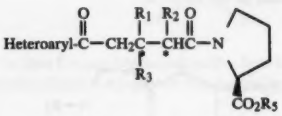
Int. Cl.³ C07D *405/06*

U.S. Cl. 260—326.36 **10 Claims**

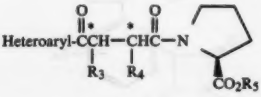
1. A compound selected from the group consisting of those of the formulae:



(I)



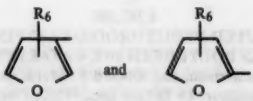
(II)



(III)

wherein R_1 is hydrogen or alkyl having 1–3 carbon atoms; R_2 is hydrogen or alkyl having 1–3 carbon atoms; R_3 is mercapto, formylthio, benzoylthio, alkanoylthio having 2–4 carbon atoms or moieties of the formulae:

$-S-CO_2CH_2C_6H_5$, $-S-CO_2R_5$, $-S-CH_2CO_2R_5$ or $-S-CO-N(R_5)_2$; R_4 is hydrogen or alkyl having 1–4 carbon atoms; R_5 is hydrogen or alkyl having 1–4 carbon atoms; and Heteroaryl is selected from the group consisting of moieties of the formulae:



wherein R_6 is hydrogen, fluoro, chloro, bromo or alkyl having 1–4 carbon atoms; and the pharmacologically acceptable cationic salts thereof when R_5 is hydrogen.

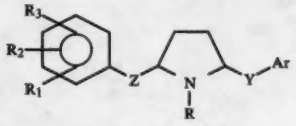
4,342,692

PYRROLIDINES

John T. Suh, Greenwich, Conn.; Rack H. Chung, Clifton Park, N.Y.; Nai-Yi Wang, Madison, Wis., and Jeffrey N. Barton, Yonkers, N.Y., assignors to USV Pharmaceutical Corporation, Tuckahoe, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,671
Int. Cl.³ C07D *207/08*
U.S. Cl. 260—326.46 7 Claims

1. A compound of the formula:

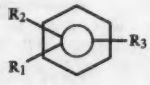


wherein,

Z and Y are each alkylene containing one to about five carbon atoms in the principal chain or said alkylene substituted with OH, alkanoyloxy, alkoxy, mercapto or alkylmercapto;

each of R_1, R_2 and R_3 is independently H, alkyl, aryl, halo, alkoxy, alkenyloxy, alkylsulfinyl, alkylsulfonyl, alkylmercapto, cyano, carboxy, carbalkoxy, carboxamido, sulfamoyl, trifluoromethyl, hydroxy, hydroxyalkyl, alkylamino, or sulfonylamino; and R_1 and R_2, when taken together, form a methylenedioxy or —O—CO—O—;

Ar is cycloalkyl or



wherein,

R_1, R_2 and R_3 are as hereindescribed; and

R is H, alkyl, cycloalkyl, aryl, aralkyl, alkenyl, alkynyl, carboalkoxy, or $CONR_4R_5$ wherein each of R_4 and R_5 is H or alkyl; wherein the total number of carbon atoms in each hydrocarbyl group is up to 10;

and pharmaceutically acceptable acid addition salts thereof.

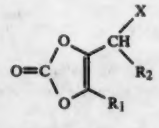
4,342,693

1,3-DIOXOLEN-2-ONE DERIVATIVES AND PROCESS FOR PRODUCTION THEREOF

Fumio Sakamoto, Osaka; Shoji Ikeda, Ibaraki; Goro Tsukamoto, Toyonaka, and Isamu Utsumi, Kyoto, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

Filed Apr. 27, 1981, Ser. No. 257,564
Claims priority, application Japan, Apr. 30, 1980, 55-58510
Int. Cl.³ C07D *317/46, 317/40*
U.S. Cl. 549—229 14 Claims

1. A 1,3-dioxolen-2-one derivative of the general formula



wherein R_1 represents a hydrogen atom, a methyl group, or an aryl group, R_2 represents a hydrogen atom, or may be taken together with R_1 to form a divalent carbon chain residue, and X represents Cl, Br or I.

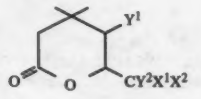
4,342,694

PROCESSES FOR PRODUCING PYRETHROID INSECTICIDE INTERMEDIATES

Kiyoshi Kondo; Toshiyuki Takashima, and Minoru Suda, all of Kanagawa, Japan, assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 90,223, Nov. 1, 1979, Pat. No. 4,235,780.
This application Jun. 23, 1980, Ser. No. 162,292
The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.
Int. Cl.³ C07D *309/30, 307/93*
U.S. Cl. 549—273 5 Claims

1. A process for preparing a 5-bromo- or 5-chlorotetrahydropyranone of the formula:



wherein X^1 and X^2 are the same or different and each is an independently selected halogen atom, a trichloromethyl group, or a trifluoromethyl group, and Y^1 and Y^2 are independently bromine or chlorine atoms with the proviso that Y^1 is a bromine atom when at least one of X^1, X^2, and Y^2 is a bromine atom, which comprises reacting 3,4-dihydro-4,4-dimethyl-2H-pryan-2-one with a halomethane of the formula $Y^1CY^2X^1X^2$ in the presence of an initiator selected from an acyl peroxide, light, and an acyl peroxide and light.

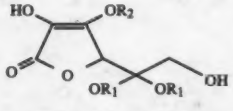
4,342,695

5-KETO-L-ASCORBIC ACID-5,5-DIMETHYL KETAL, DERIVATIVES THEREOF AND ITS USE AS AN ANTIOXIDANT AND INTERMEDIATE

Glenn C. Andrews, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 59,417, Jul. 20, 1979, Pat. No. 4,276,219.
This application Feb. 9, 1981, Ser. No. 232,596
Int. Cl.³ C07D *307/62*
U.S. Cl. 549—315 4 Claims

1. A compound having the formula



wherein R_1 is selected from the group consisting of hydrogen and methyl; and R_2 is selected from the group consisting of hydrogen, alkali metals and alkaline earth metals.

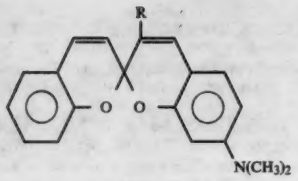
4,342,696

7-DIMETHYLAMINO-3-SUBSTITUTED-2,2'-SPIROBI[2H-1-BENZOPYRANS]

Thomas B. Garrett, Lititz; John E. Herweh, and Alan B. Magnusson, both of Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 195,320, Oct. 8, 1980, abandoned. This application Jun. 25, 1981, Ser. No. 277,176
Int. Cl.³ C07D *311/04*
U.S. Cl. 549—331 2 Claims

1. A compound having the formula



wherein R represents unsaturated alkyl.

4,342,697

PREPARATION OF GAMMA-PYRONES

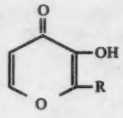
Paul D. Weeks, Gales Ferry, and Robert P. Allingham, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 608,452, Aug. 28, 1975, abandoned. This application Nov. 11, 1976, Ser. No. 741,112

Int. Cl.[3] C07D *309/22*

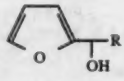
U.S. Cl. 549—396 13 Claims

1. A process for preparing a gamma-pyrone of the formula:

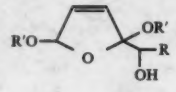


wherein R is hydrogen, lower alkyl of 1 to 6 carbon atoms, lower alkenyl of 2 to 6 carbon atoms, phenyl and benzyl which comprises

(a) contacting a compound of the formula:

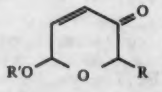


wherein R is as defined above with an alcoholic (R'OH) solution of chlorine or bromine at a temperature range of −30 ° to 40° C. to form a compound of the formula



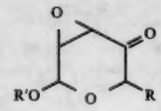
wherein R is as defined above and R' is lower alkyl of 1 to 6 carbon atoms;

(b) contacting the compound obtained in step (a) with an essentially anhydrous acid at a temperature range of −10° to 50° C. to form a compound of the formula



wherein R and R' are as defined above;

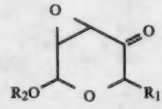
(c) contacting the compound obtained in step (b) with hydrogen peroxide at a temperature range of −10° to 15° C. to form a compound of the formula



where R and R' are as defined above; and

(d) contacting the compound obtained from step (c) with an aqueous acid solution at 80° to 110° C. to form the desired gamma-pyrone.

12. A compound of the formula



wherein R_1 is alkyl of 2 to 6 carbon atoms and R_2 is alkyl of 1 to 6 carbon atoms.

4,342,698

OLEFIN OXIDATION PROCESS

Joseph P. Bartek, University Heights; Robert K. Grasselli, Chagrin Falls, and Rimvydas L. Cepulis, Willoughby Hills, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 29, 1979, Ser. No. 53,607

Int. Cl.[3] C07D *307/36, 307/46, 307/48, 307/54*

U.S. Cl. 549—505 15 Claims

1. A process for producing an oxole comprising contacting at least one hydrocarbon selected from the group consisting of alkenes and alkadienes with oxygen in the presence of a heterogeneous catalyst represented by the formula:

$$A_aD_bSb_cP_dO_x$$

wherein

A is one or more of the elements selected from the group consisting of Fe, Co, Ni, U, Mn, La, and rare earth elements; and

D is one or more elements selected from the group consisting of Ag, Cu, V, W, Bi, Te, As, Se, Cr, Zr, Pb, Nb, Ti, Zn, Cd, alkaline earth elements and alkali metal elements; and

wherein

a is greater than 0 to 10;

b is 0–10;

c is 1–10;

d is 0–20; and

x is the number of oxygens required to satisfy the valence requirements of the other elements present.

4,342,699

PROCESS FOR PRODUCTION OF MALEIC ANHYDRIDE

David A. Palmer, and Juergen K. Holzhauer, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 23, 1981, Ser. No. 236,986

Int. Cl.[3] C07D *307/60*

U.S. Cl. 549—259 22 Claims

1. A process for producing maleic anhydride comprising

(A) contacting a non-flammable feed consisting essentially of about 3 to about 8 mole % n-butane, 8 to about 20 mole % molecular oxygen, and a balance of at least one inert gas with at least one n-butane oxidation catalyst in a heat transfer medium-cooled, tubular reaction zone maintained under oxidation conditions effective to yield a relatively low per pass conversion of n-butane, said catalyst being

graded along at least a portion of the effective length of the reaction zone so as to provide minimum reactivity nearest the feed end of the reaction zone and maximum reactivity nearest the exit end of the reaction zone, with staged or continuous increase in reactivity between the areas of minimum and maximum reactivity;

(B) withdrawing from the reaction zone an effluent comprising maleic anhydride, by-product oxygenated hydrocarbons, carbon oxides, n-butane and oxygen;

(C) separating a major portion of maleic anhydride and oxygenated hydrocarbon by-products from said effluent;

(D) removing from the effluent remaining after recovery of maleic anhydride and oxygenated hydrocarbon by-products a purge stream at a rate substantially corresponding to the rate of build-up of inert gases in the reaction zone; and

(E) recycling effluent remaining after removal of the purge stream to the reaction zone with addition of make-up gases comprising n-butane and oxygen.

4,342,700

OXIDATION-REDUCTION REAGENTS FOR A WET DESULFURIZATION PROCESS AND A PROCESS FOR PREPARING SAME

Katsuya Sakai, Yokohama; Ryuichi Mita; Toshio Kato, both of Kawasaki; Chojiro Higuchi, Kamakura, and Hisamichi Murakami, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Japan

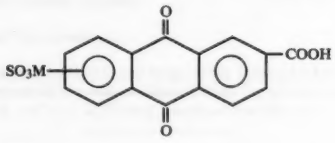
Division of Ser. No. 26,934, Apr. 4, 1979, Pat. No. 4,276,187. This application Feb. 4, 1981, Ser. No. 231,482

Claims priority, application Japan, May 19, 1978, 53-58878

Int. Cl.³ C07C *49/76*

U.S. Cl. 260—370 **4 Claims**

1. A process for the preparation of a salt of 2-carboxyanthraquinone monosulfonic acid of the general formula



wherein M is sodium, potassium or an ammonium group, characterized in that benzophenone-2,4-dicarboxylic acid, benzophenone-2,5-dicarboxylic acid or 2-(p-carboxybenzoyl) benzoic acid is heated in fuming sulfuric acid whereby dehydration and sulfonation are effected in one step without isolation.

4,342,701

PROCESS FOR THE PREPARATION OF 4,5-DINITRO-1,8-DIHYDROXYANTHRAQUINONE

Werner Steinbeck, and Günter Gehrke, both of Cologne, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 22, 1980, Ser. No. 123,870

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909481

Int. Cl.³ C07C *49/74*

U.S. Cl. 260—383 **3 Claims**

1. In the preparation and recovery of 4,5-dinitro-1,8-dihydroxy-anthraquinone by reacting 1,8-dihydroxy-anthraquinone or 1,8-dimethoxy-anthraquinone with nitric acid in the presence of sulphuric acid, and thereafter recovering the desired product in solid form from the reaction mass, the improvement which comprises effecting the nitration in the presence of sulphuric acid of a concentration such that, when the nitration reaction and if appropriate the saponification reaction have ended, an 80–100% strength sulphuric acid is present, or such a final sulphuric acid concentration is established by adding water, and effecting the recovery by permitting the reaction mass to stand in the sulphuric acid of 80 to 100% concentration.

4,342,702

METALLATED HALOGENATED ACETYLENE CORTICOID SYNTHESIS

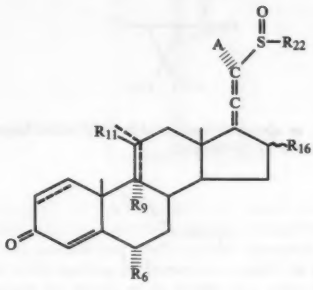
Jerry A. Walker, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 18, 1981, Ser. No. 264,759

Int. Cl.³ C07J *7/00*

U.S. Cl. 260—397.3 **20 Claims**

1. A 21-halo allene sulfoxide of the formula:



(V)

where A, R_6, R_9, R_{11}, R_{16}, R_{22}, ~ and are defined in the specification.

4,342,703

PRODUCTION OF ALKYL HYPOHALITES

Joon T. Kwon, Freehold Township, Monmouth County, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Sep. 8, 1980, Ser. No. 185,337

Int. Cl.³ C07C *69/63*

U.S. Cl. 260—453 R X **18 Claims**

1. In a process for producing a tertiary alkyl hypohalite, by reacting tertiary alkanol with at least one member selected from the group consisting of (a) halogen and aqueous inorganic base and (b) aqueous inorganic base which has been reacted with a halogen, the improvement comprising:

reacting the tertiary alkanol with said at least one member in a cooled high back-mix recycle loop reactor flow at a recycle ratio of at least 5:1 to produce the tertiary alkyl hypohalite in a reaction time of no greater than 5 minutes at a reaction temperature of no greater than 100° C. and at a velocity to provide a uniform mixing of the reactants in the loop reactor to provide a single phase flow regime.

4,342,704

PROCESS FOR THE PREPARATION OF 1,1-DICHLOROALKENES

Hellmut Hoffmann; Fritz Maurer, both of Wuppertal; Uwe Priesnitz, Unna-Massen, and Hans-Jochem Riebel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

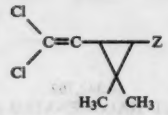
Filed Jul. 2, 1980, Ser. No. 165,872

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929645

Int. Cl.³ C07C *120/00, 121/48, 102/00, 45/61*

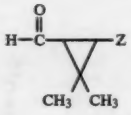
U.S. Cl. 260—464 **8 Claims**

1. A process for the preparation of a 1,1-dichloroalkene of the formula

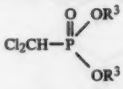


in which

Z is acetyl, cyano or carbamoyl, comprising adding a base selected from the group consisting of $NaOCH_3$, $NaOC_2H_5$ and KO—t—C_4H_9 to a mixture of an aldehyde of the formula



wherein Z is as above defined, and a dichloromethane-phosphonic acid ester of the formula



in which

R^3 each independently is alkyl with 1 to 4 carbon atoms or phenyl or the two radicals R^3 together are alkanediyl with 2 to 5 carbon atoms, and reacting at a temperature between about −50° and +50° C.

4,342,705

METHYLENE THIOETHERS

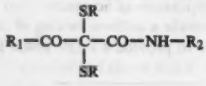
Otto W. Maender, and Eiichi Morita, both of Copley, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 97,089, Nov. 23, 1980, Pat. No. 4,271,050. This application Dec. 1, 1980, Ser. No. 238,891

Int. Cl.³ C07C *149/415, 149/40, 149/41, 149/26*

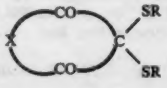
U.S. Cl. 260—465 D **25 Claims**

1. A compound of the formulas



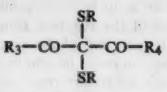
(V)

in which R is alkyl of 1–20 carbon atoms, cycloalkyl of 5–12 carbon atoms, benzyl, α-methylbenzyl, phenyl, or substituted phenyl wherein the substituents are lower alkyl, lower alkoxy, or halo, R_1 is R or anilino or substituted anilino wherein the substituents are lower alkyl, lower alkoxy or halo, and R_2 is phenyl or substituted phenyl as above, and



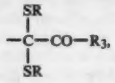
(VI)

in which R is the same as above and X is o-phenylene or straight or branched alkylene of 2–4 chain carbon atoms, and



(VII)

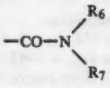
in which R is the same as above, R_3 is lower alkyl or lower alkoxy, and R_4 is carboalkoxy of 1–5 carbon atoms or



and

(VIII)

in which R is the same as above and R_5 is carboalkoxy of 1–5 carbon atoms, substituted carbamoyl of the formula



in which R_6 is hydrogen or R, R_7 is R or carboalkoxy of 1–5 carbon atoms, or R_6 and R_7 together is alkylene or oxydialkylene of 4–8 carbon atoms which along with the nitrogen atom forms a heterocycle.

4,342,706

BENZENE SULFONATE QUATERNARY AMMONIUM SALTS

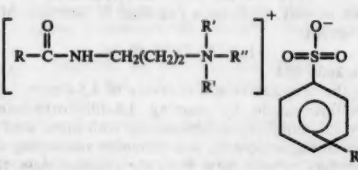
Donald E. Conner, Clifton, and Arnold W. Fogel, Park Ridge, both of N.J., assignors to Van Dyk & Company, Inc., Belleville, N.J.

Filed Sep. 8, 1980, Ser. No. 185,351

Int. Cl.³ C07C *87/30*

U.S. Cl. 260—501.15 **3 Claims**

1. As a novel composition of matter, a benzene sulfonate quaternary ammonium salt corresponding to the formula



wherein the RCO moiety is from the group consisting of gluconic and C_7–C_{21} fatty acid; R′ is an alkyl group having from 1 to 3 carbon atoms; R″ is an alkyl group having from 14 to 18 carbon atoms and, R‴ is selected from the group consisting of H and CH_3.

4,342,707

PROCESS FOR THE PREPARATION OF BIS-N-CHLORAMIDES

Hans-Georg Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 651,085, Jan. 21, 1976, abandoned. This application Oct. 2, 1978, Ser. No. 947,795

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1975, 2502411

Int. Cl.³ C07C *51/58*

U.S. Cl. 260—543 A 6 Claims

1. A process for the preparation of a bis-N-chloramide of a saturated aliphatic dicarboxylic acid, which comprises chlorinating a saturated aliphatic dicarboxylic acid diamide of the formula

$$H_2N\text{-}CO\text{-}X\text{-}CO\text{-}NH_2$$

wherein X is an aliphatic residue having 4 to 40 carbon atoms, with chlorine in a medium consisting essentially of an aqueous inorganic acid, at a temperature between 0° and 40° C.

4,342,708

HYDROCARBON-SOLUBLE DIORGANOMAGNESIUM COMPOUNDS, HYDROCARBON SOLUTIONS CONTAINING THE SAME AND PROCESSES FOR PREPARATION THEREOF

Hisaya Sakurai; Yoshihiko Katayama; Tadashi Ikegami, and Shigeo Tsuyama, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 16, 1980, Ser. No. 169,233

Claims priority, application Japan, Aug. 9, 1979, 54-101538

Int. Cl.³ C07F *3/02*

U.S. Cl. 260—665 R 10 Claims

1. A hydrocarbon-soluble isopropylmagnesium compound having the general formula:

$$(iso\text{-}C_3H_7)_mMgR_{2-m}$$

wherein m is a number in the range of the formula $0.4 \leqq m \leqq 1.6$ and R represents a member selected from the group consisting of n-C_4H_9, n-C_3H_7, C_2H_5 and combinations thereof.

4,342,709

PROCESS FOR PRODUCING DIETHYL PHOSPHITE

Fred Jaffe, Ossining, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 8, 1980, Ser. No. 214,072

Int. Cl.³ C07F *9/141*

U.S. Cl. 260—978 6 Claims

1. A process for producing diethyl phosphite of low acidity, high yields and increased purity comprising reacting triethyl phosphite with phosphorous acid in a reactor in a molar ratio of from about 2.05:1 to about 2.30:1.

4,342,710

APPARATUS FOR AERATING BEVERAGES

Rune Adolfsson, Solna, and Lennart Berns, Lund, both of Sweden, assignors to Intercylinder AB, Lund, Sweden

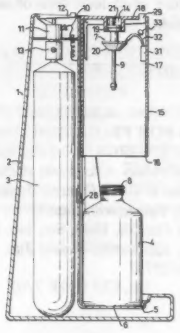
Filed Mar. 13, 1981, Ser. No. 243,421

Claims priority, application Sweden, Mar. 20, 1980, 8002181

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—121 R 5 Claims

1. An apparatus for aerating for domestic use beverages, such as water and flavoured water, comprising a stand (2) with space assigned for a glass bottle (4) and with space assigned for a gas tube (b) which contains carbon dioxide, and a sealing member (7) for sealing the mouth (8) of the glass bottle during the aerating process, through which sealing member (7) a pipe (9) for carbon dioxide extends and opens beneath the sealing member, and controllable fluid communication means connected to said pipe and adapted to be connected to the gas tube to enable controlled flow of carbon dioxide to and through said pipe, characterized in that at the place assigned for the glass bottle a bursting protection is provided, which is movable upward and downward in relation to the stand and to the glass bottle positioned in the way intended, and which in its upper position permits free placement of the bottle standing in the



place assigned for this purpose in the lower portion of the stand, and in its lower position entirely encloses the bottle thus positioned, and that said sealing member is located in the upper portion of the bursting protection and capable to be caused to seal against the mouth of the bottle only when the bursting protection is in its lower position.

4,342,711

METHOD OF MANUFACTURING HOLLOW FIBER

Yasushi Joh; Masahiro Yamazaki, both of Yokohama; Noriaki Kaneko, Kamakura; Shigehiko Oikawa, Sagamihara; Yoshihiro Makuta, Kawasaki, and Chizuko Hayashi, Yokohama, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 918,808, Jun. 26, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,491

Claims priority, application Japan, Jun. 30, 1977, 52-78083

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—41 19 Claims

1. In a method of manufacturing a hollow fiber comprising the steps of:

(a) extruding a spinning solution containing a high molecular weight compound in a concentration of 10 to 35% by weight from an annular slit, said high molecular weight compound consisting of one of cuprammonium cellulose, cellulose ester, polymethyl methacrylate and polyvinyl chloride;

(b) simultaneously extruding a core liquid which consists of a low molecular weight compound which is easily mixed or compatible with said spinning solution and is substantially incapable of coagulating said high molecular weight compound, from an orifice encircled by said annular slit; and

(c) introducing said extruded spinning solution with said core liquid into a coagulating bath containing water or mainly water, said spinning solution being coagulated in said coagulating bath,

wherein the improvement comprises: selecting said core liquid from:

(i) the group of solvents consisting of a dimethyl-sulfoxide-paraformaldehyde mixture, an aqueous cuprammonium solution and a mixture thereof for said cuprammonium cellulose;

(ii) the group of solvents consisting of acetone, methyl Cellosolve acetate, dimethyisulfoxide, dimethylformamide, dimethylacetamide, methylene chloride, 1,4-dioxane, diacetone alcohol, ethyl lactate, tetrahydrofuran, ethylforma-

mide, methyl formate, and a mixture of at least two of said solvents for said cellulose ester;

(iii) the group of solvents consisting of acetone, toluene, acetic acid, formic acid, ethyl acetate and a mixture of at least two of these for said polymethyl methacrylate; and

(iv) the group of solvents consisting of dimethylformamide, cyclohexanone, nitrobenzene, mesityl oxide, tetrahydrofuran and a mixture of at least two of said solvents for said polyvinyl chloride

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4,342,712

PROCESS FOR PRODUCING CONTINUOUS INORGANIC FIBERS

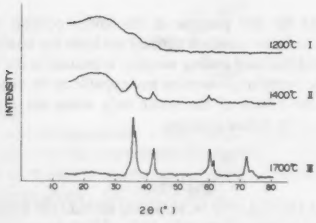
Seishi Yajima; Kiyohito Okamura; Yoshio Hasegawa, and Takemi Yamamura, all of Oharai, Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Jun. 18, 1980, Ser. No. 160,342

Claims priority, application Japan, Jun. 28, 1979, 54/80793; Mar. 11, 1980, 55/29781

Int. Cl.³ C01F *7/02*

U.S. Cl. 264—63 **12 Claims**



1. A process for producing continuous inorganic fibers, which comprises a first step of preparing a semi-inorganic block copolymer comprising polycarbosilane blocks having a main chain skeleton composed mainly of carbosilane units of the formula $-(Si-CH_2)-$, each silicon atom of said carbosilane units having bonded thereto a side-chain group selected from the class consisting of hydrogen, lower alkyl and phenyl, and titanoxane units of the formula $-(Ti-O)-$; a second step of preparing a spinning dope of said semi-inorganic block copolymer and spinning the dope; a third step of subjecting the resulting fibers to a treatment of rendering them infusible under tension or under no tension; and a fourth step of firing the infusible fibers at a temperature of 800° to 1800° C. in vacuum or in an atmosphere of an inert gas or a reducing gas.

4,342,713

PROCESS AND DEVICE FOR PRODUCTION OF CONCRETE PIPE BY FILLING AND COMPACTION OF FRESH CONCRETE IN AN UPRIGHT FORM

Owe C. G. Lärkfeldt, Täby, Sweden, assignor to AB Skanska Cementgjunteriet, Danderyd, Sweden

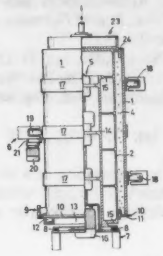
Filed Oct. 6, 1980, Ser. No. 194,592

Claims priority, application Sweden, Oct. 12, 1980, 7908482

Int. Cl.³ B28B *1/08, 7/18, 21/12, 21/14*

U.S. Cl. 264—71 **6 Claims**

1. Process for producing concrete pipe by filling and compacting fresh concrete in an upright casting form, comprising an outer jacket and a vibrator-equipped core located therein, characterized in that the outer jacket, during at least a portion of the compaction of the fresh concrete, is kept in rotation around its geometric axis with an internal peripheral speed which is greater than the maximum vibrational speed at which the vibrator-equipped core acts on the fresh concrete during the compacting thereof, the vibrational speed being the product of the amplitude and the frequency at which the core vibrates.



4,342,714

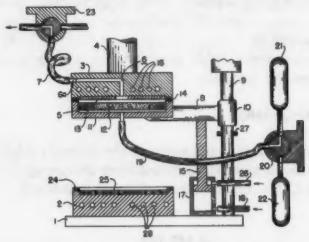
PROCESS FOR MAKING VIDEO DISCS

David P. Gregg, 3650 Helms Ave., Culver City, Calif. 90230, and Kenneth L. Keester, 66 Ocean View Blvd., #66, Santa Barbara, Calif. 93103

Filed Mar. 31, 1981, Ser. No. 249,430

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—81 **13 Claims**



1. A process for recording video information on a plastic substrate which comprises: providing a stamping element having embossments on a surface thereof representing selected video information; coating the surface of the stamping element with a selected reflective material by pyrolysis; providing a plastic substrate; moving the stamping element against a surface of the plastic substrate to cause such surface to be embossed with embossments representing the selected video information and also causing the reflective material to be bonded to the embossed surface of the plastic substrate; and withdrawing the stamping element from the surface of the plastic substrate to cause the reflective coating to be transferred from the stamping element to the plastic disc.

4,342,715

PROCESS FOR PREPARING WHOLLY AROMATIC POLYAMIDE SHAPED ARTICLES

Keizo Shimada; Akihiro Aoki; Hiroshi Mera, all of Iwakuni, and Tsutomu Nakamura, Yamaguchi, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 29, 1980, Ser. No. 201,701

Int. Cl.³ D01F *6/00*

U.S. Cl. 264—184 **9 Claims**

1. A process for preparing a wholly aromatic polyamide shaped article wherein a solution of a wholly aromatic polyamide in an organic polar amide solvent is extruded through an

orifice and the extrudate is introduced into a coagulating liquid to form a shaped article; wherein

at least 85% by mole of the recurring structural units of said wholly aromatic polyamide is represented by the general formula:

$$-(NR_1-Ar_1-NR_2CO-Ar_2-CO)- \quad (I)$$

or

$$-(NR_3-Ar_3-CO)- \quad (II)$$

wherein Ar_1 Ar_2 and Ar_3 independently stand for divalent aromatic residues (which includes the divalent residue of the formula:

$$-Ar_4-Y-Ar_5-$$

where Ar_4 and Ar_5 independently stand for divalent aromatic residues and Y is a divalent radical selected from the group consisting of

$$-CH_2-, -S-, -\overset{\overset{O}{\|}}{C}-, -SO_2- \text{and } -O-),$$

provided that at least part of the divalent aromatic residues, present in the polyamide, have chain-extending bonds which are metaoriented and neither coaxial nor parallel, and R_1, R_2 and R_3 independently stand for hydrogen or an alkyl group having 1 to 3 carbon atoms;

said process being characterized in that the polymer solution extruded through the orifice is introduced into a first coagulating bath consisting essentially of an aqueous coagulating liquid and, then, the coagulated polymer from the first coagulating bath is introduced into a second coagulating bath consisting essentially of an aqueous solution of an inorganic salt.

4,342,716

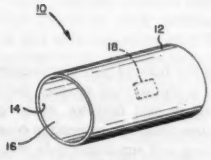
METHOD AND APPARATUS FOR MOLDING INDICIA IN ROTO-MOLDED PLASTIC CONTAINERS

Warren D. Fishbaugh, Rochester; W. Lawson Batty, Jr., Pittsford, and Frank J. Freedman, Penfield, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jun. 2, 1978, Ser. No. 912,030

Int. Cl.³ B29C *5/04*

U.S. Cl. 264—225 **1 Claim**



1. A method of rotomolding articles having indicia formed in the exterior wall thereof, comprising the steps of:

(a) forming a dam on the interior surface of a rotomold which encloses an area corresponding to the area on the article to be provided with the indicia;

(b) pouring a liquid room temperature vulcanizing silicone into the area surrounded by said dam;

(c) pressing an impression plate onto the surface of said liquid room temperature vulcanizing silicone and maintaining the position of said impression plate until RTV silicone has set;

(d) removing said dam and impression plate to leave a template which carries a mirror-image of the indicia to be molded adhering to the interior surface of the rotomold;

(e) placing a charge of thermo forming resin into the rotomold and heating the mold externally while rotating said mold to distribute and fuse said resin over the interior mold surface including said template thereby forming an article in which the exterior wall of the article has the mirror-image of said template surface molded directly therein; and thereafter

(f) removing the article from said mold while retaining said template adhered to the interior mold surface.

4,342,717

INJECTION MOULDING METHOD AND APPARATUS WITH MOULD RUNNER RESERVOIR AND SHOT EXTENSION

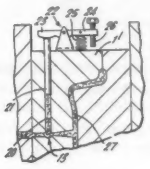
Victor T. Gardner, Sheffield, England, assignor to HPM Corporation, Mount Gilead, Ohio

Division of Ser. No. 922,448, Jul. 6, 1978, Pat. No. 4,256,689, which is a continuation of Ser. No. 725,327, Sep. 21, 1976, abandoned. This application Aug. 21, 1980, Ser. No. 179,952

Claims priority, application United Kingdom, Oct. 31, 1975, 47237/74

Int. Cl.³ B29F *1/06*

U.S. Cl. 264—328.8 **1 Claim**



1. A method of injection molding an article comprising the steps of:

providing an injection mold having a runner system extending from an article forming cavity therein to a mold entry port,

injecting a shot of plasticized thermoplastics material from an injector with a screw plasticizer into the mold through said port while advancing the screw in a chamber of the plasticizer,

communicating said runner system with a reservoir at a location upstream of said article forming cavity for conducting plasticized thermoplastics material into said reservoir against the bias of compressible means so that said compressible means is compressed and stores energy as said screw is being advanced, and

subsequently closing communication between the plasticizer chamber and said runner system while maintaining communication between said reservoir and said runner system so that the stored energy in said compressible means exerts a positive pressure on the plasticized material in the runner system and mold cavity thereby compensating for shrinkage while returning the screw for plasticization of plastics material for a succeeding shot.

4,342,718

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF IMPREGNATED MATERIAL WEBS

Hans-Peter Caratsch, Bremgarten, Switzerland, assignor to Sinter Limited, Bristol, England

Filed Jul. 25, 1980, Ser. No. 172,289

Claims priority, application Switzerland, Mar. 6, 1980, 1757/80

Int. Cl.³ B29D *7/22*

U.S. Cl. 264—345 **23 Claims**

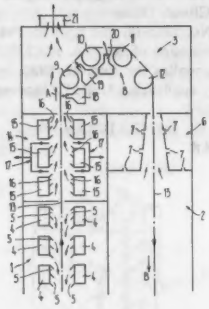
1. In a method of heat treating impregnated material webs, especially material webs impregnated with a settable synthetic resin, where in the impregnated material web is guided in an upward direction through a first heat treatment zone, thereafter about a deflection roll arrangement, and then is guided in a

downward direction through a second heat treatment zone, the improvement which comprises the steps of:

guiding the material web, after departing from the first heat treatment zone of a first length and, before passage through the deflection roll arrangement, through a cooling zone wherein the material web is cooled at both sides, and, after passage through the deflection roll arrangement through the second heat treatment zone of a second longer length.

10. An apparatus for heat treating impregnated material webs, especially material webs impregnated with a settable synthetic resin, comprising:

means defining a first heat treatment zone for the material web;



said first heat treatment zone extending essentially from a lower region towards an upper region thereof;

a deflection roll arrangement for deflecting the material web arranged following said first heat treatment zone;

a second heat treatment zone arranged following said deflection roll arrangement and extending from a top region towards a bottom thereof;

means defining a cooling zone arranged after said first heat treatment zone and before said deflection roll arrangement; and

wherein said second heat treatment zone is higher than said first heat treatment zone by a dimension which is substantially equal to the height of said cooling zone.

4,342,719

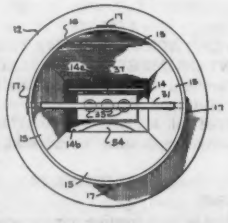
METHOD AND APPARATUS FOR MAKING TEXTURED BRICKS

William A. Cruse, and John H. Isenhour, Jr., both of Salisbury, N.C., assignors to Isenhour Brick & Tile Co., Inc., Salisbury, N.C.

Division of Ser. No. 162,054, Jun. 23, 1980, Pat. No. 4,304,541. This application May 13, 1981, Ser. No. 263,053

Int. Cl.³ B28B *11/16*

U.S. Cl. 264—504 **7 Claims**



1. The method for making extruded bricks having a textured handmade appearing face designed to form an outer building wall surface, comprising the steps of feeding a column of brick-forming clay mix into a progressively narrowing inlet funnel portion of a brick extruding die, progressively constricting the clay mix column while feeding the same from said inlet funnel portion through a die throat section of the extruding die of horizontally elongated rectangular cross-section defined by downstream converging upper, lower and side boundary surfaces to shape the clay mix column to a rectangular cross-section whose width dimension perpendicular to said face slightly exceeds the desired ultimate brick width, disrupting the clay column in said die throat section at a subsurface location spaced near and below the uppermost boundary surface of the die throat section along a plane substantially spanning the transverse extent of the die throat section by pressurized downstream-directed liquid jets internally disrupting the clay mix column at said subsurface location in said die throat section along a disruption plane substantially paralleling said uppermost boundary surface, and plowing off the uppermost strata of the clay mix column at a downstream location spaced from the zone of said subsurface disrupting liquid jets to expose the disrupted zone of the clay mix column and form the textured handmade appearing face of the extruded brick, and slicing the column exiting from the die along planes perpendicular to the direction of movement thereof after plowing off the uppermost strata thereof to form discrete bricks.

4,342,720

METHOD AND APPARATUS FOR GENERATION OF THERMONUCLEAR POWER

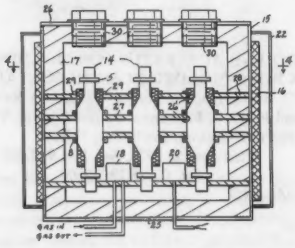
Daniel R. Wells, Miami, Fla., assignor to Trisops, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 954,248, Oct. 24, 1978, abandoned. This application Mar. 29, 1979, Ser. No. 25,105

The portion of the term of this patent subsequent to Jan. 10, 1995, has been disclaimed.

Int. Cl.³ G21B *1/02*

U.S. Cl. 376—107 **7 Claims**



1. An apparatus for heating and compressing plasma comprising a housing, a plurality of parallel theta pinch reactor assemblies mounted in said housing, each reactor assembly comprising a vacuum chamber, respective plasma sources and means for generating and simultaneously injecting plasmoids into opposite ends of each of said vacuum chambers, including conical theta pinch coil means on the opposite ends of the chambers, common magnetic coil means surrounding the housing for generating a primary steady state magnetic guide field simultaneously within all said vacuum chambers, said primary guide field being oriented to confine and direct plasmoids to collision approximately at the centers of said vacuum chambers, and means including additional coil means on each of the vacuum chambers in the vicinity of their center portions for compressing plasma in the vicinity of said center portions of the vacuum chambers for a discrete period of time beginning with each plasmoid collision event, wherein said housing includes a plurality of spaced parallel bulkhead plate members supporting said reactor assemblies in parallel relationship and formed with aligned apertures slidably receiving said reactor assemblies, and wherein said housing has a wall portion located

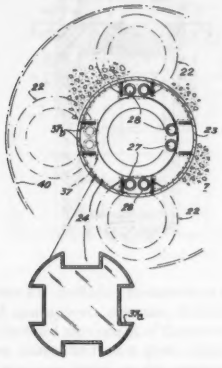
adjacent one end of each of the reactor assemblies and being provided with respective removable closure means for at times providing access to said reactor assemblies.

4,342,721

FAST NUCLEAR REACTOR

Pierre Pomie, Aix en Provence, and Philippe Verriere, Manosque, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 2, 1979, Ser. No. 16,742
Claims priority, application France, Mar. 7, 1978, 78 06435
Int. Cl.³ G21C *15/18*
U.S. Cl. 376—298 **10 Claims**



1. A fast neutron nuclear reactor comprising a vesel having a vertical axis and containing a reactor core, a volume of liquid metal for cooling the core, at least one main heat exchanger and at least one auxiliary heat exchanger, said reactor vessel being closed at the top by a reactor vault roof, said auxiliary heat exchanger being constituted by a plurality of vertical heat-exchanger modules, each of said modules comprising a circuit for the flow of coolant fluid, said reactor vault roof being pierced by a single orifice in vertical alignment with the vertical axis of said auxiliary heat exchanger, the dimension of said orifice in horizontal cross-section being larger than that of each one of said heat-exchanger modules but smaller than the overall dimension of the auxiliary heat exchanger in horizontal cross-section, and a removable shield plug closing said orifice, said shield plug having a depending axial extension penetrating into said reactor vessel with said modules disposed around said extension, the fluid circuit of each module communicating with an inlet tube and with an outlet tube for admission and discharge of the coolant fluid, said inlet and oulet tubes of each module extending in a direction parallel to the shield plug and the axial extension thereof within a respective recess formed in the inner surface of one of said orifice and said shield plug, whereby any of said modules of said auxiliary heat exchanger can be individually introduced into and taken out of said reactor in any order through said orifice after removal of said shield plug.

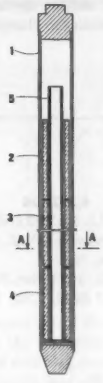
4,342,722

CONTROL ROD FOR A NUCLEAR REACTOR

Jacques Blum, Levallois, France, assignor to Uranium Pechiney Ugine Kuhlmann, Paris, France

Filed Oct. 24, 1980, Ser. No. 200,146
Claims priority, application France, Nov. 19, 1979, 79 29004
Int. Cl.³ G21C *7/04*
U.S. Cl. 376—327 **2 Claims**

1. In the core of a nuclear reactor having a central zone of maximum flux density and a control rod the improvement comprising said control rod having a length equal to said reactor core and being fixedly positioned within the reactor core such that the center of said control rod is central of and extends through said zone of maximum flux density, said control rod comprising a core having a plurality of at least three elongated sections made of boron glass positioned end to end



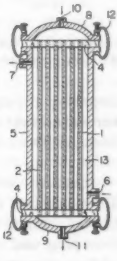
to define non-overlapping joins therebetween, and at least one of said elongated sections is more than one-half the length of said control rod and is located centrally of said zone of maximum flux density of said core, and said joins being located outward of said zone of maximum flux density.

4,342,723

GAS-EXCHANGE SHEET MEMBERS

Ryoichi Sado, Saitama, and Kazutoki Tahara, Ageo, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Japan

Continuation-in-part of Ser. No. 96,567, Nov. 21, 1979, abandoned. This application Jul. 3, 1980, Ser. No. 165,729
Claims priority, application Japan, Nov. 24, 1978, 53-145171; Dec. 30, 1978, 53-165825
Int. Cl.³ B01D *31/00*
U.S. Cl. 422—48 **7 Claims**



7. An oxygenator in a mechanical heart and lung which comprises a tubular body having an air inlet and an air outlet, a plurality of sheet members made of a silicone rubber mounted in said body, a pair of support flanges made of silicone rubber and engaged with opposite ends of said sheet members maintaining the sheet members substantially in parallel relation with each other, each of the sheet members being provided with a plurality of capillary pores extending in substantially aligned parallel relation with each other through said support flanges and each of the capillary pores being open at opposite ends thereof and having an undulating longitudinal cross section and being comprised of an alternate repetition of wider portions and narrower portions, end plates positioned on opposite ends of the tubular body with one end plate having a blood

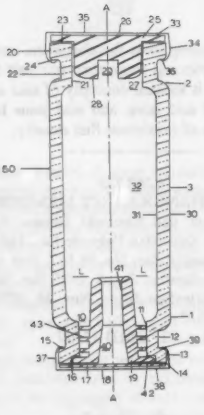
inlet and with the other having a blood outlet to allow blood flow therethrough and also through said pores in said sheet member, and clamp means securing the outer margins of the end plates with opposite ends of said body and with said silicone rubber support flanges coacting with the clamped outer margins of the end plates and the opposite ends of said body to provide hermetic seals when the clamping means is positioned in a clamped assembly.

4,342,724

RED CELL LABELING VIAL

Rama K. Narra, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 21, 1980, Ser. No. 180,209
Int. Cl.³ B01L *3/00, 11/00*
U.S. Cl. 422—101 **10 Claims**



1. A centrifuge tube container comprising a container tube, a first resilient plug, and a weir separate and distinct from said first resilient plug;

said container tube comprising a central chamber wall defining a central chamber and a lower chamber wall having a first container aperture, said weir being supported within said first aperture;

said weir including a first end portion extending at a predetermined distance from said first resilient plug into said central chamber thereby defining a predetermined level above said first resilient plug, said weir further including a channel wall spaced from the central chamber wall and defining a central channel directly opening into and in fluid communication with said central chamber so that fluids and solids present in said central chamber may be centrifuged down and solids collected below the level of the first end portion of said weir, said central channel of said weir being adapted to receive and guide a hypodermic needle to extend beyond the first end portion of said weir and to withdraw fluid from said central chamber at a level above said first end portion of said weir;

said first resilient plug sealingly engaging said weir in said first container aperture;

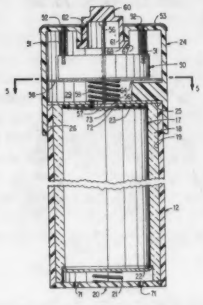
said container tube further comprising an upper chamber wall having a second container aperture and a second resilient plug, said second resilient plug sealingly engaging said second container aperture.

4,342,725

OXYGEN SUPPLY APPARATUS

John F. Collins, Lexington, Ky., assignor to Preiser Scientific, Incorporated, Charleston, W. Va.

Filed Oct. 19, 1978, Ser. No. 952,658
Int. Cl.³ A62B *7/08;* B01J *7/00*
U.S. Cl. 422—126 **6 Claims**



1. An oxygen supply apparatus comprising:

a support member;

a plurality of housings;

means to support each of said housings on said support member;

each of said housings having a cartridge of oxygen generating material disposed therein, which material generates oxygen when ignited;

means to insulate against transmission of heat from said cartridge to said housing during generation of oxygen by the oxygen generating material;

a cover for each of said housings;

each of said housings having a chamber therein to receive oxygen from said cartridge when the oxygen generating material in said cartridge is ignited;

oxygen receiving means to be worn by a user; and

means to communicate each of said chambers with said oxygen receiving means;

each of said covers including means to cause ignition of the oxygen generating material within said cartridge in said housing having said cover;

each of said housings including the cover and a bottom portion, with the bottom portion having a detachably mounted end, with resilient means between said end and the bottom of a cartridge in said housing, serving to separate the bottom of the cartridge and the end so as to inhibit heating of the end by heat from the cartridge and serving to urge the cartridge to a predetermined position within the housing, away from said end, and

timed signal means which may be set to produce an alarm signal that occurs a predetermined period of time after such setting, with such predetermined period of time being equal to or less than the time period for which the oxygen generating material is effective in said cartridge to generate oxygen; and

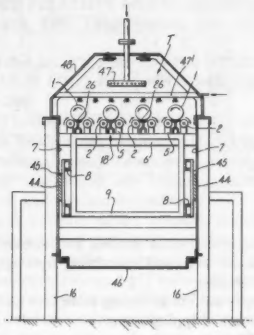
means for preventing operation of the ignition means and so preventing ignition of the oxygen generating material in the cartridge without the setting of such signal means.

4,342,726

MACHINE FOR STERILIZING FOODSTUFFS IN CYLINDRICAL CONTAINERS AT NORMAL ATMOSPHERIC PRESSURE

Antonio Savi, Parma, Italy, assignor to Officine Meccaniche Savi Antonio S.p.A., Italy

Claims priority, application Italy, Apr. 13, 1981, 40040-A/81
Filed Jul. 23, 1981, Ser. No. 286,357
Int. Cl.³ A23P 3/04
U.S. Cl. 422—302 4 Claims



1. A machine for sterilizing foodstuffs in cylindrical containers at normal atmospheric pressure, furnished with means for pilgrim step forward movement of the containers, in which the latter revolve about their own axes, comprising a device for feeding the said containers to the machine, a tunnel, a first stage of which subjected to the effects of steam and a final stage of which subject to those of chilled atomized water and, eventually, air, characterized by the fact that it comprises: a longitudinal cage furnished with a capacity for longitudinal pilgrim step motion by means of a variable speed motor, provided uppermost with parallel longitudinal supports whose upward extremity consists of a pair of wing elements opening upwards in V-formation and designed to bear up a row, or line, of containers during that phase of the cage's movement upwards and forward; at least one pair of longitudinal stretches of roller comprising longitudinal lengths connected by support joints fastened to the upper traverses of the machine flanks which extend upwards from the basic framework, the said rollers revolving in like direction by means of a reduction gear, and positioned such that each roller pair straddles the space defined by each said longitudinal support, at a mutual distance allowing passage between said roller pair of the said pair of wings, the said rollers being designed to support a line of containers revolving about their own axes during that phase of the cage's movement downwards and in return.

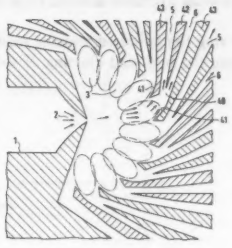
4,342,727

METHOD FOR THE SEPARATION OF GASEOUS ISOTOPE COMPOUNDS

Karl Janner, Erlangen, and Klaus Gregorius, Neunkirchen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Oct. 30, 1979, Ser. No. 89,520
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849162
Int. Cl.³ B01D 59/00
U.S. Cl. 423—3 4 Claims

1. Method for the separation of gaseous isotope compounds in a mixture by selectively exciting by electromagnetic radiation one isotope compound, with the other isotope compounds in the mixture selectively non-excited, which comprises cooling a gas stream of gaseous isotope compounds together with an added gas by adiabatic expansion through a nozzle to form dimers containing said one isotope compound and said added gas by condensing said one gaseous isotope compound and said added gas, dissociating the dimers containing said one isotope compound by selectively exciting said one isotope compound by said electromagnetic radiation, thereby creating in said gas stream condensed particles containing the non-excited isotope compounds which are of large mass compared to said one isotope compounds, flowing the gas stream through a plurality



of diffuser spaces arranged about the discharge of the nozzle, deflecting the flow of the gas stream to effect a change of isotope distribution and different enrichment in the gas stream caused by centrifugal forces, and separating the gas stream by a peeler in the diffuser space into gas streams of different enrichment.

4,342,728

PROCESS FOR DIGESTING TUNGSTEN ORES CONTAINING ORGANIC MATTER

Paul B. Queneau, Golden; Leo W. Beckstead, and Robert F. Hogsett, both of Arvada, all of Colo., assignors to AMAX Inc., Greenwich, Conn.

Filed Jan. 19, 1981, Ser. No. 225,904
Int. Cl.³ C01G 41/00
U.S. Cl. 423—61 10 Claims

1. A process for digesting scheelite concentrates containing organic matter, which comprises establishing a slurry of a sodium carbonate solution having sodium carbonate concentration between about 50 gpl and about 200 gpl and a scheelite concentrate in an amount to provide a Na_2CO_3/WO_3 weight ratio of between about 0.9 to about 1.6, and heating the slurry to a temperature between about 230° C. and about 320° C. under an oxygen partial pressure of at least about 25 psi to digest the scheelite concentrate forming a pregnant sodium tungstate solution and to oxidize the organic matter.

7. A process for digesting wolframite concentrates containing organic matter which comprises establishing a slurry of a sodium hydroxide solution and a wolframite concentrate and heating the slurry to a temperature between about 230° C. and about 320° C. under an an oxygen partial pressure of at least about 25 psi to digest the wolframite concentrate forming a pregnant sodium tungstate solution and to oxidize the organic matter.

4,342,729

METHOD FOR OBTAINING ALUMINA FROM CLAYS

Emilia Garcia Clavel, Zurbano, 58; Jesus Martinez Lope, Torrelaguna, 125, and Teresa Casais Alvarez, all of Madrid, Spain, assignors to Jesus Martinez Lope and Emilia Garcia Clavel, both of Madrid, Spain

Filed Jul. 17, 1980, Ser. No. 169,903
Claims priority, application Spain, Jul. 26, 1979, 482.881
Int. Cl.³ C01F 7/26
U.S. Cl. 423—127 10 Claims

1. Method for obtaining alumina from aluminum silicates which consists essentially of:

(a) calcining a stoichiometric dry mixture of aluminum silicate and sodium or potassium bisulphate to a temperature between 300° and 750° C. for 45–120 minutes to form a

reaction product comprising the corresponding double salt ($AlMe_3(SO_4)_3$) where Me is Na or K, and SiO_2,

(b) dissolving at room temperature the reaction product of step (a) in an aqueous alkali to form an alkali aluminate solution, or in water to form an aqueous solution of said double salt,

(c) separating the solution of step (b) from said SiO_2,

(d) precipitating hydrated alumina from the solution of step (c),

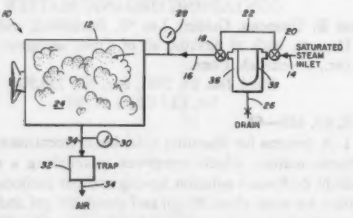
(e) recovering the hydrated alumina from step (d), and

(f) calcining the hydrated alumina of step (d) to form alumina.

4,342,730
APPARATUS FOR AND METHOD OF REMOVING VOLATILE BOILER-FEED ADDITIVES FROM PRESSURIZED STEAM

Kenneth A. Perrotta, Salem, N.H., assignor to Whatman Reeve Angel Limited, United Kingdom

Filed Apr. 23, 1981, Ser. No. 256,899
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—215.5 5 Claims



1. A method of preparing purified, saturated, pressurized steam from pressurized, saturated steam which contains particulate matter and a volatile, alkaline boiler-feed additive therein, which method comprises:

(a) passing the saturated, pressurized steam through the wall of a filter tube, which filter tube comprises a plurality of randomly disposed, nonwoven, inorganic glass fibers having interstices therebetween, to define the porosity of the filter tube, the fibers having a diameter of from about 0.001 to 10 microns, and bonded at the junction of the fiber-crossover points with a bonding agent selected from the group consisting of hardened silicon or fluorocarbon resins to form a porous, self-supporting filter tube to filter the particulate matter from the pressurized saturated steam;

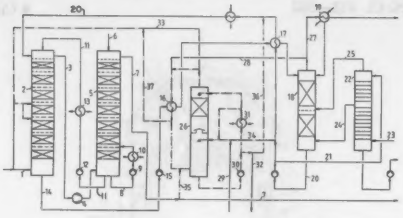
(b) passing the particulate-free, filtered, pressurized saturated steam directly downstream through a bed of hydrogen-form, sulfonic acid, ion-exchange resin material, the resin material composed of a high temperature, steam resistant polymer, the resin material having a sufficient bed-depth to provide for the reaction of the strong acid hydrogen of the sulfonic acid ion-exchange resin with the alkaline, volatile, boiler-feed additive in the steam in an acid-base reaction, the saturated steam having a pressure of from about 15 to 90 psi; and,

(c) recovering a filtered, purified, saturated, pressurized steam essentially free of particulate matter and having less than about 3 parts per million of volatile, alkaline, boiler-feed additive therein.

4,342,731
METHOD FOR REMOVING HYDROGEN SULFIDE FROM COKE OVEN GAS

Horst Ritter, Essen, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,579
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—234 3 Claims



1. In the sulfur-ammonia process for recovering hydrogen sulfide from coke oven gas containing hydrogen sulfide and ammonia, comprising

(a) a hydrogen sulfide stripping zone;

(b) an ammonia stripping zone;

(c) a deacidifying zone;

(d) an ammonia distillation zone;

(e) a concentrating/scrubbing zone;

feeding said coke oven gas and ammoniacal wash water to said hydrogen sulfide stripping zone and removing a first washed gas stream having a lower hydrogen sulfide content than said coke oven gas and recovering a first effluent liquid stream including ammoniacal water and hydrogen sulfide;

feeding said first washed gas stream to said ammonia stripping zone along with wash water to produce a second washed gas stream having a lower ammonia content than said first washed gas stream and producing a second effluent liquid stream;

recovering said second washed gas stream as a first product gas stream of washed coke oven gas and returning said second effluent liquid stream to said hydrogen sulfide stripping zone as at least a portion of the required ammoniacal wash water;

feeding said first effluent liquid stream to said deacidifying zone along with ammonia-rich gas to produce a second product gas stream containing hydrogen sulfide and to produce a third effluent liquid stream of wash water containing ammonia;

stripping at least a portion of said third effluent liquid stream to produce a fourth effluent liquid stream and to produce the said ammonia-rich gas;

delivering the said ammonia-rich gas to said deacidifying zone;

the improvement in said process comprising operating said concentrating/scrubbing zone alternatively

Firstly: as a scrubbing zone when said second product gas stream is continuously withdrawn as a product; introducing a portion of said first product gas stream into said concentrating/scrubber zone and washing therein with a portion of the said third effluent liquid stream to produce a third washed gas stream having a lower hydrogen sulfide content than the said second product gas stream and producing a fifth effluent liquid stream, recycling at least a portion of said fifth effluent liquid stream to said concentrating/scrubbing zone and delivering at least a portion thereof to said hydrogen sulfide stripping zone as a portion of the said ammoniacal wash water; and introducing said third washed gas stream into said hydrogen sulfide stripping zone along with the said coke oven gas; and

Secondly: as a concentrating zone when said second product gas stream is delivered entirely to said concentrating/-

scrubbing zone, delivering a portion of said third effluent liquid stream to said concentrating/scrubbing zone to produce a third washed gas stream, returning said third washed gas stream to said hydrogen sulfide stripping zone along with coke oven gas; and withdrawing a portion of the said fifth effluent liquid stream as a strong liquor containing hydrogen sulfide.

4,342,732

SLUDGE FIXATION AND STABILIZATION

Robert H. Smith, 1402 Conshohocken Rd., Norristown, Pa. 19401

Filed Jul. 17, 1980, Ser. No. 169,820
Int. Cl.³ C01B *17/00;* **B09B** *1/00;* **C04B** *11/00, 1/00*
U.S. Cl. 423—242 **23 Claims**

1. A method of disposing of wastes from a coal burning unit having flue gas desulfurization equipment utilizing wet lime or limestone scrubbing which develops a mixture of calcium sulfite, calcium sulfate and any related coal-associated wet waste products, said method comprising:

supplying said calcium sulfite, calcium sulfate and any related coal-associated wet waste products;

supplying a substantially saturated calcium sulfite-calcium bisulfite solution having a pH below about 4;

and combining said calcium sulfite-calcium bisulfite solution with said calcium sulfite, calcium sulfate and related coal-associated wet waste products to raise the pH of said calcium sulfite-calcium bisulfite solution sufficiently to precipitate and crystalize a substantial portion of the sulfite value in said solution, whereby said waste products are encapsulated into a solid mass.

4,342,733

METHOD OF IMPROVING SULFITE ANTIOXIDANT PERFORMANCE IN HIGH SOLIDS SCRUBBERS

Joe C. Steelhammer, Lansdale, and Paul J. Hutta, Warminster, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jan. 9, 1981, Ser. No. 223,591
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 **20 Claims**

1. A method for inhibiting the amount of oxidation of sulfite to sulfate in a sulfite containing aqueous gas scrubber medium, said medium having solids particulate matter disposed therein, said method comprising adding to said medium an effective amount of a water soluble antioxidant additive adapted to inhibit said oxidation, and also adding an effective amount of a water soluble topping agent to said medium, wherein said topping agent comprises a member selected from the group consisting of polyphosphate compounds, organophosphonic acid compounds, oligomers of said phosphonic acid compounds and mixtures thereof.

4,342,734

METHOD FOR FORMING γ-BORON

Kaplesh Kumar, Wellesley, and Dilip K. Das, Bedford, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 20, 1981, Ser. No. 284,848
Int. Cl.³ C01B *35/02*
U.S. Cl. 423—298 **14 Claims**

1. A method of transforming β-rhombohedral boron into dense, substantially γ-tetragonal boron, comprising the steps of:

obtaining β-rhombohedral boron in powder form;

melting the β-boron in a plasma to form a directional high velocity jet of molten boron particles;

directing the jet onto a substrate;

rapidly cooling the molten particles at the substrate to form a deposit of dense, substantially γ-tetragonal boron in solid form; and

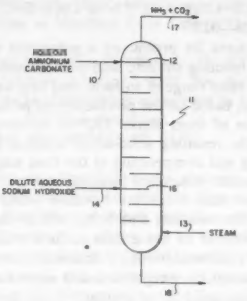
removing the deposit from the substrate.

4,342,735

STRIPPING OF AQUEOUS AMMONIUM CARBONATE SOLUTION

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Apr. 23, 1981, Ser. No. 256,945
Int. Cl.³ C01C *1/10*
U.S. Cl. 423—356 **10 Claims**



1. In a process for stripping in a stripping column ammonia and carbon dioxide from an aqueous ammonium carbonate solution including organic ammonium salts, wherein said column has a plurality of trays and a top and a bottom, the improvement comprising:

introducing inorganic base into the column at a point below the point of introduction of the aqueous ammonium carbonate solution and at a tray above the tray adjacent the column bottom to liberate ammonia from the organic ammonium salts and strip the liberated ammonia from the solution.

4,342,736

REDUCTION OF THE DEGRADATION OF REFRACTORIES IN A CARBON BLACK REACTOR

Earl J. Estopinal, Jr., Monroe, La., assignor to Columbian Chemicals Company, Tulsa, Okla.

Filed Jun. 1, 1981, Ser. No. 269,249
Int. Cl.³ C01B *31/02;* **C09C** *1/48*
U.S. Cl. 423—450 **16 Claims**

1. In a method of producing carbon black for subjecting to a separation step a hydrocarbon feedstock containing a meltable solid, withdrawing from the separation step feedstock reduced in the meltable solid content and withdrawing from the separation step a hydrocarbon concentrated with the meltable solid, wherein the feedstock reduced in the meltable solid content is introduced into an oil furnace process reactor having a combustion zone and a reaction zone to produce carbon black, the improvement comprising introducing the hydrocarbon concentrated with the meltable solid into the reaction zone downstream of the combustion zone at a point where the temperature is below the melting point of the meltable solid such that the meltable solid is emitted from the reactor along with combustion gases and the carbon black product thereby producing carbon black from the oil concentrated with the meltable solid without substantially depositing the melted solid on the interior walls of the reactor.

4,342,737

PROCESS OF PRODUCING A POTASSIUM SULFATE SALT

Hidemaro Iwashita, and Kenichi Hayashi, both of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Filed Dec. 17, 1979, Ser. No. 104,049
Claims priority, application Japan, Dec. 25, 1978, 53-158444; Jun. 8, 1979, 54-71145
Int. Cl.³ C01B 7/01, 17/96; C01D 5/02; C05D 1/02
U.S. Cl. 423—522 7 Claims

1. A process for producing a potassium sulfate salt which comprises reacting sulfuric acid with potassium chloride at an equivalent ratio range of sulfuric acid to potassium chloride of 1.07 to 1.40, based on the production of potassium sulfate, at a temperature of from above 250° C. to about 500° C., while kneading the resulting solid-liquid mixture by shearing, folding, milling and compressing at the final stage of the reaction wherein molten potassium bisulfate is present in said solid-liquid mixture, said potassium bisulfate being produced in the course of the reaction and being left in the product of the reaction because of the excess sulfuric acid, said potassium sulfate salt produced having a chloride content less than about one (1) percent by weight and said equivalent ratio enabling said resulting solid-liquid mixture to be kneaded at the final stage of the reaction.

4,342,738

HYDROGEN GENERATION AS FUEL BY USE OF SOLAR ULTRAVIOLET LIGHT PROCESS

Paul W. Burgund, 2235 Avenue L, Fort Madison, Iowa 52627

Filed Aug. 21, 1981, Ser. No. 295,214
Int. Cl.³ C01B 13/00
U.S. Cl. 423—579 5 Claims

1. A feasible economic method of producing hydrogen and oxygen from water, said method comprising:

separating sunlight into ultraviolet light and infrared light;

concentrating said separated infrared light and said separated ultraviolet light;

placing water in an enclosed reactor vessel;

using said separated and concentrated infrared light as a heat source to convert water to steam;

placing said steam in a second reactor vessel which is at least partially transparent to ultraviolet light and continually subjecting said steam to infrared light to superheat said steam to catalytic decomposition temperatures of about 800° C.;

contacting said superheated steam, with a steam decomposition catalyst comprising a finely divided heavy metal, or a salt or oxide of a heavy metal selected from the group consisting of Group IIIB, Group IVB, Group VB, Group VIB, Group VIIB and Group VIIIB of the Periodic Chart;

introducing said concentrated ultraviolet light into said second reactor to separate said steam, in the presence of said decomposition catalyst, into its component parts of hydrogen and oxygen;

and collecting the hydrogen and the oxygen.

4,342,739

NOVEL MATERIAL FOR IMMUNOLOGICAL ASSAY OF BIOCHEMICAL COMPONENTS AND A PROCESS FOR THE DETERMINATION OF SAID COMPONENTS

Fujio Kakimi, Minami-ashigara; Nobuo Hiratsuka, Tokyo, and Hiroharu Matsukawa, Shizuokashi, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 8, 1980, Ser. No. 110,318
Claims priority, application Japan, Jan. 9, 1979, 54-1555; Nov. 16, 1979, 54-149209; Nov. 16, 1979, 54-149210
Int. Cl.³ G01N 33/58, 33/60; B01J 13/02
U.S. Cl. 424—1 37 Claims

1. A microcapsule comprising an oily liquid core material and a wall material having bound thereto an antigen or antibody to the surface thereof, wherein a marking substance is incorporated into said core material.

4,342,740

METHOD AND KIT FOR LABELING RED BLOOD CELLS WITH TECHNETIUM-99M

Rama K. Narra, North Brunswick, and Bruce L. Kuczynski, Highland Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 18, 1980, Ser. No. 179,306
Int. Cl.³ A61K 49/00; G01T 1/00; B65D 71/00
U.S. Cl. 424—1 13 Claims

1. A method of labeling red blood cells with technetium-99m comprising:

(i) mixing a blood sample with anticoagulant, stannous ion and buffer;

(ii) adding saline to the mixture;

(iii) centrifuging the mixture;

(iv) separating the supernatant from the red blood cells; and

(v) mixing radioactive pertechnetate and an oxidizing agent with the red blood cells.

4,342,741

DENTIFRICE COMPOSITIONS

Hideki Aoki, Kukizakimura, Japan, assignor to Dental Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1981, Ser. No. 257,981
Int. Cl.³ A61K 7/16
U.S. Cl. 424—57 2 Claims

1. A dentifrice composition for toothpaste having a pH of from 4 to 6.9 and consisting essentially of:

30 to 35 parts by weight of an abrading agent containing 5 to 25 parts by weight of synthetic hydroxyapatite powder and the balance of at least one member selected from the group consisting of calcium phosphate and calcium pyrophosphate;

20 to 35 parts by weight of at least one filler selected from the group consisting of glycerin and sorbitol; and

20 to 35 parts by weight of water.

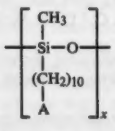
4,342,742

SURFACE-ACTIVE POLYSILOXANES

Henri Sebag, Paris, and Guy Vanlerberghe, Claye-Souilly, both of France, assignors to L'Oreal, Paris, France

Filed Nov. 27, 1979, Ser. No. 98,329
Claims priority, application France, Dec. 5, 1978, 78 34268
Int. Cl.³ A61K 7/42, 7/04, 7/06, 31/695; C07F 7/08, 7/10
U.S. Cl. 424—59 11 Claims

1. A cyclic and/or linear polysiloxane or a mixture thereof, of the formula.



(I)

in which x denotes an integer from 3 to 10 and A denotes a cationic, anionic, zwitterionic or non-ionic hydrophilic unit which contains one or more of the same or different groups which are amine, amine oxide, ammonium, ammonioalkylcarboxylate, ammonioalkylsulphonate, amide, sulphonamide, thioether, sulphoxide or hydroxyl groups.

4,342,743

PREPARATION FOR THE CARE AND CONDITIONING OF THE FEET

Lithia Panton-Moore, 570 Lefferts Ave., 2D, Brooklyn, N.Y. 11203

Filed Feb. 24, 1981, Ser. No. 237,740
Int. Cl.³ A61K *7/04, 37/48*
U.S. Cl. 424—61 8 Claims

1. In a preparation for mixture with water to form a foot-soak solution in which the feet may be soaked to sooth, comfort, relax and cleanse the feet, and soften the dead calloused skin tissue to facilitate the removal thereof, the improvements comprising, in combination by volume, about two parts magnesium sulphate, about two parts sodium chloride, about one part papaya enzyme, and about one part salicylic acid.

4,342,744

HAIR TREATMENT PRODUCTS

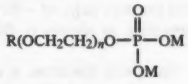
Masaaki Arai, Tocorozawa; Masami Ohba, Funabashi; Guy A. G. Ricketts, Tokyo, all of Japan, and Jean A. Steer, Weybridge, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 14, 1980, Ser. No. 167,978
Claims priority, application United Kingdom, Jul. 19, 1979, 7925174
Int. Cl.³ A61K *7/11, 7/06*
U.S. Cl. 424—70 4 Claims

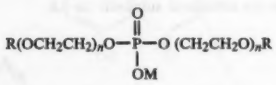
1. A product for conditioning and setting hair which comprises:

(A) from 0.05% to 3% by weight of a polyvinylpyrrolidone quaternised copolymer; and

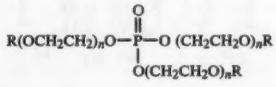
(B) from 0.1% to 3% by weight of a phosphate ester comprising a monoester of the formula



and/or a diester of the formula



and/or a triester of the formula



in which formulae R is an hydrocarbon group having from 8 to 22 carbon atoms, n is 0 or an integer of from 1 to 10 and M is hydrogen or an alkali metal, ammonium or amine salt-forming group.

4,342,745

USE OF POLYVINYL ALCOHOLS FOR THE TREATMENT OF LESIONS

Velimir Mirkovitch, Pully, Switzerland, assignor to Zyma S.A., Nyon, Switzerland

Filed May 19, 1980, Ser. No. 151,083
Claims priority, application Switzerland, May 31, 1979, 5089/79
Int. Cl.³ A61K *31/74*
U.S. Cl. 424—78 5 Claims

1. A method of treating a lesion selected from the group consisting of varicose ulcers, burns, post-traumatic lesions, post operative lesions, fresh decubital ulcers, infected decubital ulcers, infected skin and eczemas, which comprises topically applying to said lesion an effective amount, to cicatrise said lesion, of polyvinyl alcohol in the form of powders or granulates and which is insoluble in cold water and having a degree of hydrolysis greater than 99.0%.

4,342,746

METHOD FOR TREATING DUTCH ELM DISEASE

Gary A. Strobel, Bozeman, Mont., assignor to Endowment and Alumni Foundation at Montana State University, Bozeman, Mont.

Continuation-in-part of Ser. No. 95,448, Nov. 19, 1979, Pat. No. 4,277,462. This application Nov. 10, 1980, Ser. No. 205,862
The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.
Int. Cl.³ A01N *63/00, 63/02*
U.S. Cl. 424—93 20 Claims

1. A method for treating Dutch elm disease comprising applying a high molecular weight antibiotic-forming strain of *P. syringae* to an elm tree in a Dutch elm disease-controlling amount; said antibiotic being the same as that obtained by incubating *P. syringae* NRRL B-12050 at about 25°–28° C. in an about 1.5–2.5% potato dextrose broth adjusted to a final concentration of about 0.5–3% glucose, for about two to four days; mixing a precipitating agent with the inoculated broth in an amount sufficient to precipitate very high molecular weight substances from said broth; separating the precipitate and the liquid phase from each other; evaporating the liquid phase to dryness, thereby leaving a residue; chromatographing the residue on a column capable of separating in the void volume of eluate substances having a molecular weight of at least about 1,800 from low molecular weight substances; and recovering said antibiotic from said void volume of eluate; wherein the steps for obtaining said antibiotic are carried out at a temperature below about 50° C.

4,342,747

COLOSTRUM-BASED COMPOSITION FOR EXTERNAL USE

Serge Liotet, 12, rue Thibaud, 75014 Paris, and Pierre-Jean Assier, 18, rue Lamarch, 75018 Paris, both of France

Filed Jun. 26, 1980, Ser. No. 163,189
Claims priority, application France, Jul. 2, 1979, 79 17118
Int. Cl.³ A61K *35/12*
U.S. Cl. 424—95 4 Claims

1. A composition for external ophthalmic use as a therapeutic agent and/or a tear substitute, characterized in that it contains colostrum as an active ingredient in an effective amount in an eye lotion carrier or in an ointment carrier.

4,342,748

SLEEP-PROMOTING FACTOR

John R. Pappenheimer, Cambridge; James M. Krueger, Newton, and Manfred L. Karnovsky, Cambridge, all of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 166,909, Jul. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 52,969, Jun. 28, 1979, abandoned, which is a continuation of Ser. No. 891,362, Mar. 29, 1978, abandoned. This application Jan. 29, 1981, Ser. No. 229,654
Int. Cl.³ A61K *35/12*
U.S. Cl. 424—95 7 Claims

1. A process for the preparation of a sleep-promoting factor having the following characteristics:

(a) it is inactivated by incubation with carboxypeptidase;

(b) upon elution from a cation exchange resin under acidic conditions the cationic form is converted to the anionic form;

(c) it has a R_f of 0.15–0.35 after ascending paper chromatography on Whatman No. 1 paper by development with a

mixture of acetone:1-propanol:water:8 M NH_4OH (40:30:20:10, V/V/V/V);

(d) it has R_{LYS} of 0.2–0.3 after high voltage electrophoresis at pH 1.9, 65 V cm^{-1} for 60 minutes in formic acid:acetic acid:water (150:100:750, V/V/V) on Whatman No. 3 paper;

(e) it passes through a molecular sieve which prevents the passage of molecules larger than 1000 daltons;

(f) it elutes prior to sucrose on a polysaccharide gel-filtration column;

which comprises:

(i) extraction of homogenized brains from sleep-deprived animals with an acidified organic solvent;

(ii) ion exchange of the extract from (i) with a cation exchange resin and elution under acidic conditions;

(iii) removal of buffers and other small molecules by solvent extraction and re-extraction;

(iv) ion exchange of the extract remaining after Step (iii) with an anion exchange resin; and

(v) elution of said sleep-promoting factor from said anion exchange resin.

4,342,749

CLAVULANIC ACID DERIVATIVES A PROCESS FOR THEIR PREPARATION AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

John B. Harbridge, Coulsdon, England, assignor to Beecham Group Limited, England

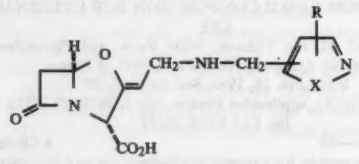
Division of Ser. No. 79,557, Sep. 27, 1979, Pat. No. 4,303,665. This application Jul. 14, 1980, Ser. No. 168,574

Claims priority, application United Kingdom, Oct. 27, 1978, 42338/78

Int. Cl.³ A61K *35/00, 31/43*

U.S. Cl. 424—114 **24 Claims**

13. A method treating bacterial infections in humans and animals which comprises administering to a human or animal in need thereof at least a synergistically effective amount of a compound of the formula (II):



(II)

wherein X is sulphur or oxygen and R is hydrogen or alkyl of 1 to 3 carbon atoms, and an antibacterially effective amount of amoxycillin, a pharmaceutically acceptable salt thereof or an in vivo hydrolyzable ester thereof, in combination with a pharmaceutically acceptable carrier.

4,342,750

METHOD FOR TREATING BENIGN PROSTATIC HYPERTROPHY WITH N-ACYL AMPHOTERICIN B

Harry W. Gordon, Bronx County, N.Y., assignor to Schmid Labs., Inc., Little Falls, N.J.

Continuation of Ser. No. 775,797, Mar. 9, 1977, Pat. No. 4,173,629, which is a continuation of Ser. No. 628,790, Nov. 4, 1975, Pat. No. 4,039,661, which is a continuation-in-part of Ser. No. 584,607, Jun. 6, 1975, which is a continuation of Ser. No. 414,968, Nov. 23, 1973, which is a division of Ser. No. 313,568, Dec. 8, 1972, which is a division of Ser. No. 194,052, Oct. 29, 1971, which is a division of Ser. No. 70,509, Sep. 8, 1970, which is a continuation of Ser. No. 623,847, Mar. 17, 1967, Pat. No. 3,584,118, and a continuation-in-part of Ser. No. 544,712, Apr. 25, 1966, abandoned. This application Jun. 8, 1979, Ser. No. 46,710

Int. Cl.³ A61K *35/00, 31/70, 31/71*

U.S. Cl. 424—122 **4 Claims**

1. A process for the treatment of benign prostatic hypertrophy in a large mammal afflicted with benign prostatic hypertrophy which comprises orally administering to said mammal an effective dose for treating benign prostatic hypertrophy of n-acyl amphotericin B.

4,342,751

MAJUSCULAMIDE C

Richard E. Moore, Honolulu, Hi., and Jon S. Mynderse, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 9, 1981, Ser. No. 241,812

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **4 Claims**

1. Majusculamide C, which is a white amorphous solid having these characteristics:

(a) a molecular weight of approximately 984;

(b) an empirical formula of about $C_{50}H_{80}N_8O_{12}$;

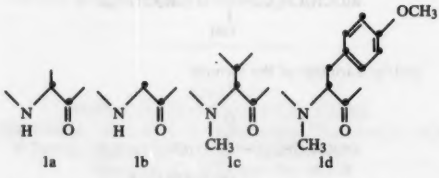
(c) a specific optical rotation, $[\alpha]_D$, of −96° (c 2.5, CH_2Cl_2);

(d) an infrared spectrum as shown in the accompanying drawing;

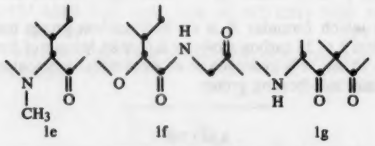
(e) an ultraviolet absorption spectrum in ethanol with absorption maxima at 278 nm (ε 1420) and 230 nm (ε 5900);

(f) is soluble in solvents such as methanol, dichloromethane, and acetone, but is insoluble in water;

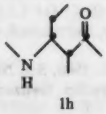
(g) contains the structural sub-units 1*a*–1*h*:



1a 1b 1c 1d



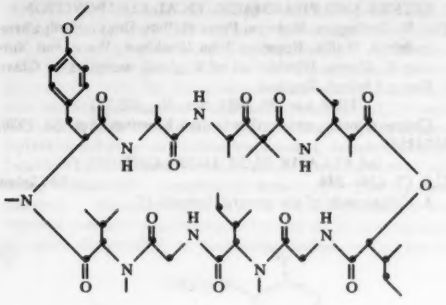
1e 1f 1g



1h

(h) appears to contain the sub-unit grouping: glycyl-N-methylisoleucylglycyl-N-methylvalyl-N,O-dimethyltyrosyl; and

(i) the following tentative structure:



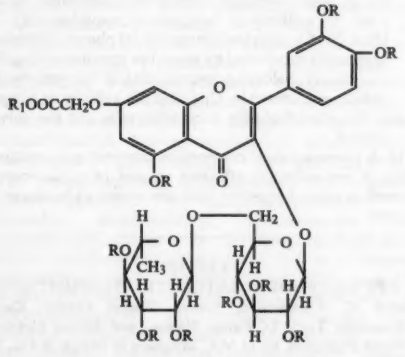
4,342,752

CARBALKOXYMETHYL DERIVATIVES OF RUTIN POLY(H-)SULFATE AND METHOD OF USE

Vijay G. Nair, New York; John F. Poletto, Nanuet, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 15, 1981, Ser. No. 273,523
Int. Cl.³ A61K *31/70*; C07H *13/04*
U.S. Cl. 424—180 19 Claims

5. A method of inhibiting the complement system in a warm-blooded animal which comprises administering to said animal an effective complement inhibiting amount of a compound of the formula:



wherein R_1 is C_1–C_6 alkyl, R is SO_3B, and B is a pharmaceutically acceptable salt cation selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of C_1–C_6 trialkylamine, piperidine, pyrazine, C_2–C_6 alkanolamine and C_3–C_6 cycloalkylamine.

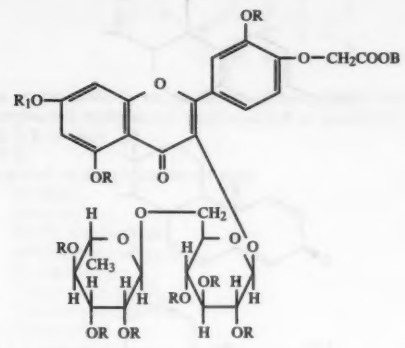
4,342,753

CARBOXYALKYL DERIVATIVES OF RUTIN POLY(H-)SULFATE

Vijay G. Nair, New York; John F. Poletto, Nanuet, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 15, 1981, Ser. No. 273,782
Int. Cl.³ A61K *31/72*; C07H *11/00*
U.S. Cl. 424—180 14 Claims

7. A method of inhibiting the complement system in a warm-blooded animal which comprises administering to said animal an effective complement inhibiting amount of a compound of the formula:



wherein R_1 is selected from the group consisting of SO_3B and $BOOCCH_2$—, R is SO_3B, and B is a pharmaceutically acceptable salt cation selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of C_1–C_6 trialkylamine, piperidine, pyrazine, C_2–C_6 alkanolamine and C_3–C_6 cycloalkylamine.

4,342,754

STEROID-SPIRO-OXATHIAZOLIDINE DERIVATIVES AND A PROCESS FOR THE PREPARATION THEREOF

Sandor Solyom; Katalin Szilagyi nee Farago; Lajos Toldi; Inge Schäfer; Eleonora Szondy; Janos Borvendeg, and Ilona Hermann nee Szente, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Mar. 11, 1981, Ser. No. 242,711
Claims priority, application Hungary, Mar. 12, 1980, OE 579
Int. Cl.³ A61K *31/58*
U.S. Cl. 424—241 16 Claims

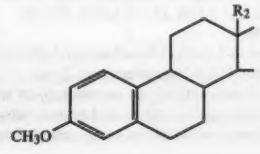
1. A steroid-spiro-oxathiazolidine compound of the formula (I),

(I)

wherein

R_1 is C_{1-3} alkyl or C_{2-4} alkenyl, and

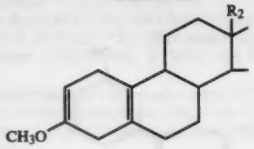
Z is one of the groups of the formulae (II) to (VI),



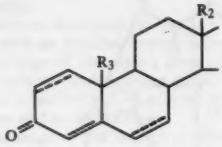
(II)

-continued

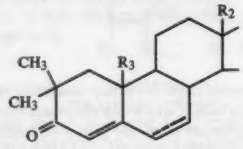
(III)



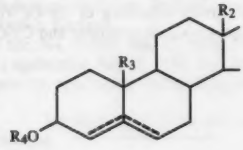
(IV)



(V)



(VI)



wherein

R_2 is methyl or ethyl,

R_3 is hydrogen or methyl,

R_4 is hydrogen, C_{1-3}alkyl, di-(C_{1-4} alkyl)-amino-C_{1-4}-alkyl, C_{2-4} alkoxycarbonyl or C_{3-6} carboxyalkylcarbonyl, and the dotted lines can represent additional valence bonds, but if Z is a group of the formula (VI), a double bond exists either between the carbon atoms in positions 4 and 5 or between the carbon atoms in position 5 and 6 if R_4 is di-($_{1-4}$ alkyl)-amino-C_{1-4} alkyl or C_{3-6} carboxyalkylcarbonyl rather than H or C_{1-3} alkyl, the compounds may also be formed as pharmaceutically effective salts by treatment with an organic or mineral acid or with a base.

2. A pharmaceutical composition containing as active ingredient an effective amount of a compound as defined in claim 1, together with a pharmaceutically acceptable carrier or diluent.

4,342,755

TRANQUILLO-SEDATIVE BENZODIAZEPINE DERIVATIVES

Julia Röhricht; Lajos Kisfaludy; Laszlo Ürögdi; Eva Palosi; Szabolcs Szeberenyi, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Continuation-in-part of Ser. No. 795,894, May 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 580,307, May 23, 1975, Pat. No. 4,045,433. This application Sep. 9, 1980, Ser. No. 185,512

Claims priority, application Hungary, May 29, 1974, RI-538

Int. Cl.³ A61K *31/55;* **C07D** *243/24*

U.S. Cl. 424—244 **4 Claims**

1. Racemic-1-methyl-4-carbamoyl-5-phenyl-7-chloro-1,3,4,5-tetrahydro-2H-1,4-benzodiazepine-2-one.

2. A method of tranquilizing an animal subject which comprises the step of administering to said animal subject a tranquilizingly effective amount of the compound defined in claim 1.

4,342,756

AMINOCYCLOPENTANE ALKENOIC ACIDS AND ESTERS AND PHARMACEUTICAL COMPOSITIONS

Eric W. Collington, Welwyn; Peter Hallett, Buntingford; Christopher J. Wallis, Royston; John Bradshaw, Ware, and Norman F. Hayes, Hitchin, all of England, assignors to Glaxo Group Limited, England

Filed Apr. 29, 1981, Ser. No. 258,721

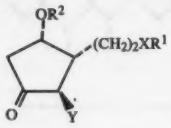
Claims priority, application United Kingdom, Apr. 30, 1980, 8014256

Int. Cl.³ A61K *31/54, 31/535;* **C07D** *295/14*

U.S. Cl. 424—244 **14 Claims**

1. Compounds of the general formula (1)

(1)



wherein

X is cis or trans -CH=CH-;

R^1 is straight or branched C_{1-7} alkyl bearing as a terminal substituent -$COOR^3$ where R^3 is a hydrogen atom, C_{1-6} alkyl or C_{7-10} aralkyl;

Y represents a saturated heterocyclic amino group which has 5 to 7 ring members and (a) optionally contains in the ring -O-, -S-, -SO_2-, -NR^4 (where R^4 is a hydrogen atom, C_{1-7} alkyl or aralkyl having a C_{1-4} alkyl portion; and (b) is optionally substituted by one or more C_{1-4} alkyl groups;

R^2 is (i) C_{2-4} alkanoyl; (ii) C_{3-6} alkenyl, optionally substituted by phenyl (the phenyl being optionally substituted by C_{1-4} alkyl, C_{1-4} alkoxy, halogen, C_{5-7} cycloalkyl or phenyl (C_{1-4}) alkyl), biphenyl (optionally substituted by C_{1-4} alkyl, C_{1-4} alkoxy or halogen), or naphthyl; (iii) C_{1-12} alkyl; (iv) C_{1-5} alkyl substituted by (a) phenyl, (b) biphenyl (optionally substituted by phenyl or one or two C_{1-4} alkyl, C_{1-4} alkoxy, halogen substitutuents), or (c) naphthyl (optionally substituted by C_{1-4} alkyl, C_{1-4} alkoxy or halogen); and the physiologically acceptable salts and the solvents thereof.

14. A pharmaceutical composition comprising an antithrombotic or anti-asthmatic effective amount of a compound as claimed in claim 1 together with one or more pharmaceutical carriers.

4,342,757

CEPHALOSPORIN ANTIBIOTIC COMPOSITIONS

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,070

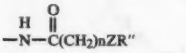
Claims priority, application United Kingdom, Jun. 16, 1970, 29158/70; Jul. 9, 1970, 33415/70; Sep. 30, 1970, 46556/70; Dec. 10, 1970, 58731/70; Jan. 27, 1971, 3296/71; Jan. 27, 1971, 3297/71; Jan. 27, 1971, 3298/71; Feb. 8, 1971, 4179/71; Feb. 11, 1971, 4479/71; Feb. 11, 1971, 4480/71; Feb. 26, 1971, 5588/71

Int. Cl.³ C07D *501/20;* **A61K** *31/545*

U.S. Cl. 424—246 **3 Claims**

1. An antibacterial composition comprising an antibacterially effective amount of a 3-A-7-methoxy-7-acylamido-3-cephem-4-carboxylic acid wherein A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzoyl)oxymethyl, (p-methylbenzoyl)oxymethyl, pivaloyloxymethyl, (1-adamantyl)carboxymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)oxymethyl, (N-ethylcarbamoyl)oxymethyl, [N-(2-

chloroethyl)carbamoyl]oxymethyl, (N-phenylcarbamoyl)oxymethyl, N-p-sulfophenylcarbamoyl)oxymethyl, p-carboxymethylphenylcarbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbamoylthiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethylpiperzinium-1-thiocarbonylthiomethyl, 2-furoylthiomethyl, isothiouroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxymethyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R:2S-epoxypropylphosphonyloxymethyl, or pyridinium methyl; and acylamido is



wherein n is 0–4, Z is oxygen or sulfur, and R″ is benzyl, p-hydroxybenzyl, 4-amino-4-carboxybutyl, methyl, cyanomethyl, 2-pentenyl, n-amyl, n-heptyl, ethyl, 3- or 4-nitrobenzyl, phenethyl, β,β-diphenylethyl, methyldiphenylmethyl, triphenylmethyl, 2-methoxyphenyl, 2,6-dimethoxyphenyl, 2,4,6-trimethoxyphenyl, 3,5-dimethyl-4-isoxazolyl, 3-butyl-5-methyl-4-isoxazolyl, 5-methyl-3-phenyl-4-isoxazolyl, 3-(2-chlorophenyl)-5-methyl-4-isoxazolyl, 3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolyl, D-4-amino-4-carboxybutyl, D-4-N-benzoylamino-4-carboxy-n-butyl, p-aminobenzyl, o-aminobenzyl, m-aminobenzyl, (3-pyridyl)-methyl, 2-ethoxy-1-naphthyl, 3-carboxy-2-quinoxalinyl, 3-(2,6-dichlorophenyl)-5-(2-furyl)-4-isoxazolyl, 3-phenyl-4-isoxazolyl, 5-methyl-3-(4-guanidinophenyl)-4-isoxazolyl, 4-guanidinomethylphenyl, 4-quanidinomethylbenzyl, 4-guanidinobenzyl, 4-quanidinophenyl, 2,6-dimethoxy-4-guanidinophenyl, o-sulfobenzyl, p-carboxymethylbenzyl, p-carbamoylmethylbenzyl, m-fluorobenzyl, m-bromobenzyl, p-chlorobenzyl, p-methoxybenzyl, 1-naphthylmethyl, 3-isothiazolylmethyl, 4-isothiazolylmethyl, 5-isothiazolylmethyl, 4-pyridylmethyl, 5-isoxazolylmethyl, 4-methoxy-5-isoxazolylmethyl, 4-methyl-5-isoxazolylmethyl, 1-imidazolylmethyl, 2-benzofuranylmethyl, 2-indolylmethyl, 2-phenylvinyl, 2-phenylethynyl, 2-(5-nitrofuranyl)vinyl, phenyl, o-methoxyphenyl, o-chlorophenyl, o-phenylphenyl, p-aminomethylbenzyl, 1-(5-cyanotriazolyl)methyl), difluoromethyl, dichloromethyl, dibromomethyl, 1-(3-methylimidazolyl)methyl, 2- or 3-(5-carboxymethylthienyl)-methyl, 2- or 3-(4-carbamoylthienyl)methyl, 2- or 3-(5-methylthienyl)methyl, 2- or 3-(5-methoxythienyl)methyl, 2- or 3-(4-chlorothienyl)methyl, 2- or 3-(sulfothienyl)methyl, 2-or 3-(5-carboxythienyl)methyl, 3-(1,2,5-thiadiazolyl)methyl, 3-(4-methoxy-1,2,5-thiadiazolyl)methyl, 2-furylmethyl, 2-(5-nitrofuryl)methyl, 3-furylmethyl, 2-thienylmethyl, 3-thienylmethyl, and tetrazolylmethyl; and the pharmaceutically acceptable salts thereof, or the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin in a pharmaceutically acceptable carrier vehicle.

4,342,758

ALLYLSULFOXIDE ENZYME INHIBITORS

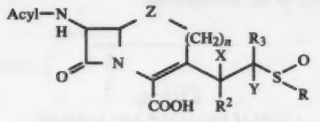
Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 66,603, Aug. 15, 1979, abandoned. This application May 7, 1980, Ser. No. 147,658

Int. Cl.³ C07D *501/36*

U.S. Cl. 424—246 **6 Claims**

1. A compound of structural formula



or a pharmaceutically acceptable salt thereof wherein: Acyl is thienylacetyl, phenylacetyl, phenoxyacetyl or mandeloyl;

Z is S, or S(o);

R is

(a) phenyl or phenyl substituted with:
- (1) nitro,
- (2) cyano,
- (3) C_{1-3}alkylsulfonyl,
- (4) C_{1-3}alkoxycarbonyl,
- (5) o-C_{1-3}alkyl,
- (6) o,o′-di(C_{1-3}alkyl), or
- (7) di(trifluoromethyl);

(b) trihalomethyl;

(c) 5–6 membered heteroaryl selected from:
- (1) thiazolyl,
- (2) imidazolyl,
- (3) pyridinyl,
- (4) pyrazinyl,
- (5) oxazolyl,
- (6) pyrimidinyl, and
- (7) thienyl; and n=1;

Y is hydrogen;

X is chloro, fluoro, bromo, iodo, C_{1-3}alkanoyloxy, toluenesulfonyloxy, benzenesulfonyloxy, C_{1-3}alkanesulfonyloxy, trifluoroacetoxy, p-nitrobenzoyloxy, or p-nitrophenoxy; or

X and Y taken together form a double bond;

R^2 is hydrogen, fluoro, chloro, C_{1-3}alkoxycarbonyl, cyano or trifluormethyl; and

R^3 is hydrogen or C_{1-3}alkyl.

4,342,759

ANTITHROMBOTIC METHOD

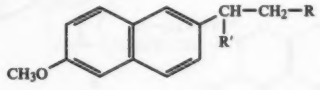
Thomas A. Purcell, Fontenay aux Roses; Braham Shroot, Sophia Antipolis, and Daniel Galtier, St Cyr L'Ecole, all of France, assignors to Synthelabo, Paris, France

Filed Aug. 19, 1980, Ser. No. 179,460

Int. Cl.³ A61K *31/54, 31/495*

U.S. Cl. 424—246 **2 Claims**

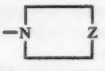
1. A method of treating or inhibiting thrombus formation or growth rate in a patient susceptible to thrombosis which comprises administering to a patient in need thereof an effective dosage to provide an antithrombotic effect of a compound having the formula



wherein

R′ is H or CH_3

R is a



radical in which Z is O, S, SO, SO_2 or NR_1, R_1 being H, C_6H_5, CH_3, $CONR_2R_3$, $COOR_2$, COR_2 or SO_2R_2, where R_2 and R_3 are, independently, H, C_{1-4} alkyl, C_6H_5 or CF_3.

2. A method of claim **1**, wherein said compound (I) is 2-[2-(4-

isopropylaminocarbonylpiperazino)-1-methylethyl]-6methoxynaphthalene or its hydrochloride.

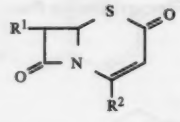
4,342,760

CEPHALOSPORIN ANALOGUES

Masashi Hashimoto, Nakayama; Keiji Hemmi, Kyoto; Matsuhiko Aratani, Osaka; Hidekazu Takeno, Higashimukikitamachi, and Daijiro Hagiwara, Moriguchi, all of Japan, assignors to Fujisawa Pharmaceutical Company, Ltd., Osaka, Japan

Division of Ser. No. 43,706, May 30, 1979, Pat. No. 4,264,597.
This application Oct. 14, 1980, Ser. No. 196,830
Claims priority, application United Kingdom, Jun. 6, 1978, 26421/78
Int. Cl.³ C07D *501/20*
U.S. Cl. 424—246 13 Claims

1. Cephalosporin analogues of the formula



wherein R^1 is amino or amino substituted with a pharmaceutically acceptable carboxylic acyl protective group for the amino substituents in cephalosporin compounds or with benzyl, phenethyl or trityl, and

R^2 is carboxy or a pharmaceutically acceptable ester of said carboxy group employed in cephalosporin compounds, and pharmaceutically acceptable salts thereof.

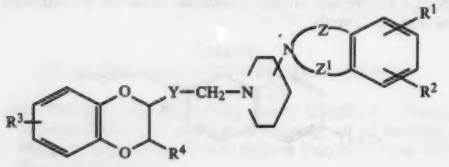
4,342,761

PIPERIDINE DERIVATIVES

Terence J. Ward, Slough, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

Filed Oct. 20, 1980, Ser. No. 198,414
Claims priority, application United Kingdom, Nov. 1, 1979, 7937811
Int. Cl.³ A61K *31/445;* C07D *419/14*
U.S. Cl. 424—246 8 Claims

1. A compound of the formula:



and acid addition and quaternary ammonium salts thereof, wherein Y represents —CHOH— or —CO—; Z and Z^1 represent, independently, —CO—, $—SO_2—$ or $—COCH_2—$; R^1 and R^2 independently represent hydrogen, halogen, lower alkyl, lower alkoxy, nitro or trifluoromethyl; R^3 represents hydrogen, halogen, lower alkyl or lower alkoxy and R^4 represents lower alkyl or hydrogen.

8. A method of treating an animal afflicted with a disease or disorder requiring action on the cardiovascular system which comprises administering to said animal an effective amount of a compound as claimed in claim 1 or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

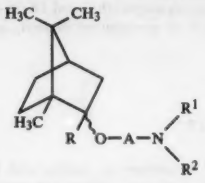
4,342,762

BASIC ETHERS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Zoltan Budai; Laszlo Magdanyi; Aranka Lay nee Konya; Tibor Mezei; Katalin Grasser; Lujza Petöcz, and Ibolya Kosoczky, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Dec. 11, 1980, Ser. No. 215,154
Claims priority, application Hungary, Dec. 14, 1979, EE 2715
Int. Cl.³ A61K *31/54, 31/495, 31/445;* C07D *245/02*
U.S. Cl. 424—246 8 Claims

1. A basic ether of the formula (I) or a pharmaceutically acceptable acid addition salt or quaternary salt hereof



(I)

wherein

R^1 and R^2 are the same or different and each can represent a C_{1-5} alkyl group or a C_{3-6} cycloalkyl group or they form together with the adjacent nitrogen atom, a piperidino, pyrrolidino, morpholino, thiomorpholino, piperazino, N-C_{1-3} alkyl-piperazino, N-phenyl-piperazino or N-benzyl-piperazino group,

R is phenyl, phenyl-(C_{1-3} alkyl) or thienyl which can be substituted by one or more halogen or C_{1-3} alkoxy substituents,

A is C_{2-5} straight or branched alkylene chain, and $\simeq$ represents a valence bond of α or β configuration.

7. A pharmaceutical composition possessing tranquilizing, analgesic, antiparkinsonism and antiepileptic effect, comprising an effective amount of a compound as defined in claim 1 or a pharmaceutically effective salt thereof, together with an appropriate inert, non-toxic solid or liquid pharmaceutical carrier.

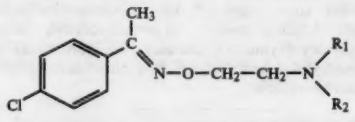
4,342,763

P-CHLOROACETOPHENONE OXIME COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS

Jose Esteve Soler, Barcelona, Spain, assignor to Provesan S.A., Geneva, Switzerland

Filed Feb. 6, 1980, Ser. No. 119,104
Claims priority, application France, Feb. 13, 1979, 79 03617
Int. Cl.³ C07D *295/12;* A61K *31/445, 31/535*
U.S. Cl. 424—248.56 10 Claims

1. A compound of general formula I



(I)

wherein R_1 and R_2 in association with the nitrogen atom to which they are linked, form a pyrrolidino, piperidino or morpholino group, and the physiologically acceptable acid addition salts.

10. An analgesic, anti-inflammatory and anti-tussive pharmaceutical composition comprising a pharmaceutically acceptable carrier, and an effective amount of at least one compound of general formula I according to claim 1.

4,342,764

GUANIDINE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS AND USE

Atso Ilvespää, Allschwil; Jörg Frei, Hölstein, and Ernst Schweizer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

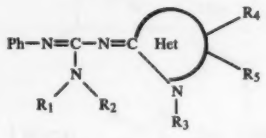
Filed May 19, 1980, Ser. No. 151,031

Claims priority, application Switzerland, May 29, 1979, 4995/79

Int. Cl.³ A61K *31/535, 31/42;* C07D *413/12, 261/04*

U.S. Cl. 424—248.56 13 Claims

1. Guanidine derivatives of the formula



(I)

in which R_1 is an aliphatic radical which is unsubstituted or substituted by hydroxyl, lower alkanoyloxy, lower alkoxy, lower alkenoxy, halo, carboxy or lower alkoxycarbonyl, or is a cycloaliphatic radical which is unsubstituted or substituted by lower alkyl, R_2 is hydrogen or an aliphatic hydrocarbon radical which is unsubstituted or substituted by hydroxyl, lower alkanoyloxy, lower alkoxy, lower alkenoxy, halo, carboxy or lower alkoxycarbonyl, or R_1 and R_2 taken together are a lower alkylene chain which is uninterrupted or interrupted by oxygen, sulfur or nitrogen, which is unsubstituted or substituted by lower alkyl or phenyl, R_3 is hydrogen or lower alkyl, R_4 is hydrogen, lower alkyl, lower alkoxy, lower alkylthio, lower alkylamino, di-lower alkylamino, halo, trifluoromethyl, or phenyl which is unsubstituted or substituted by one to three identical or different lower aliphatic hydrocarbon radicals, hydroxy, mercapto, lower alkoxy, lower alkenoxy, lower alkylenedioxy, lower alkylthio halo trifluoromethyl, nitro, amino, lower alkylamino, di-lower alkylamino, carboxy or lower alkoxycarbonyl, or is, on a carbon atom which has single bonds on both sides, oxo, R_5 is hydrogen or lower alkyl, Het is isoxazolidine, and Ph is phenyl which is unsubstituted or substituted by one to three identical or different lower aliphatic hydrocarbon radicals, hydroxy, mercapto, lower alkoxy, lower alkenoxy, lower alkylenedioxy, lower alkylthio, halo, trifluoromethyl, nitro, amino, lower alkylamino, di-lower alkylamino, carboxy or lower alkoxycarbonyl, and also their tautomeric compounds and salts.

11. A therapeutic composition for the treatment of hyperglycaemia comprising an effective amount of an hypoglycaemic active compound of formula I as claimed in claim 1 together with a pharmaceutically acceptable excipient.

4,342,765

GUANIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Derrick F. Jones, Macclesfield, and Keith Oldham, Cheadle, both of England, assignors to Imperial Chemical Industries Limited, London, England

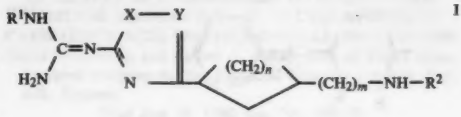
Filed Jan. 16, 1980, Ser. No. 112,608

Claims priority, application United Kingdom, Jan. 18, 1979, 7901872

Int. Cl.³ C07D *277/20, 263/30*

U.S. Cl. 424—249 10 Claims

1. A guanidine derivative of the formula:



I

in which X is oxygen or sulphur;

Y is nitrogen or a CH radical;

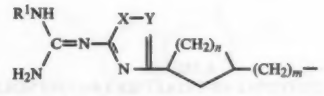
n is 1, 2, 3 or 4;

m is 0 or 1;

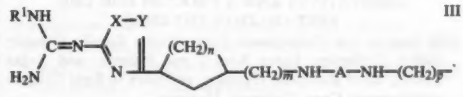
R^1 is hydrogen, alkyl of 1–6 carbons or alkoxyalkyl of 3 to 10 carbons in which the oxygen is separated from the nitrogen of the guanidine by at least two carbons;

$-R^2$ is a radical of the formula —A—B in which A is 3,4-dioxocyclobuten-1,2-dyl or C=Z in which Z is oxygen, sulphur or NCN, NNO_2, $CHNO_2$, $NCONH_2$, $C(CN)_2$, $NCOR^3$, NCO_2R^3, NSO_2R^3 or NR^4 in which R^3 is alkyl of 1 to 6 carbons, phenyl or pyridyl and R^4 is hydrogen or alkyl of 1 to 6 carbons;

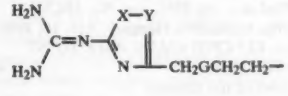
B is alkyl, alkoxy or alkylthio of 1 to 6 carbons or NHR^5 in which R^5 is hydrogen or alkyl of 1 to 6 carbons, alkenyl or alkynyl of 3 to 10 carbons in which the double or triple bond is separated from the nitrogen of NHR^5 by at least one carbon, cycloalkyl of 3 to 6 carbons, (primary hydroxy)alkyl or (primary amino)alkyl of 2 to 6 carbons, haloalkyl of 1 to 6 carbons, alkoxyalkyl of 3 to 6 carbons in which the oxygen is separated from the nitrogen of NHR^5 by at least two carbons, phenylalkyl or pyridyl-3-methyl, or R^5 is benzoylaminoalkyl or benzenesulphonylaminoalkyl in which the alkyl part is of 2 to 6 carbons and the benzene ring carries an optional chlorine, or a radical of the formula:



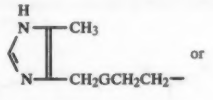
II



III

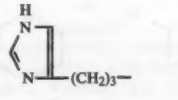


IV



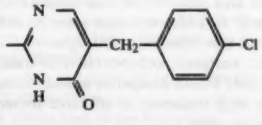
V

or



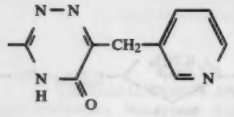
VI

in which X, Y, n, m and R^1 have the meanings given above, p is 2 to 12 and G is sulphur or methylene; or $-R^2$ is:



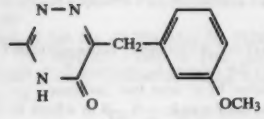
VII

-continued



VIII

or



IX

and the pharmaceutically-acceptable acid-addition salts thereof.

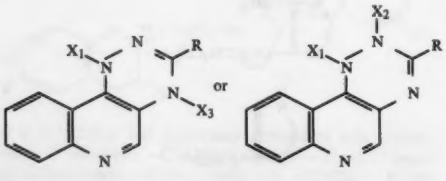
4,342,766

NOVEL DIHYDRO-AS-TRIAZINO[5,6-c]QUINOLINE DERIVATIVES AND A PROCESS FOR THE PREPARATION THEREOF

Edit Berényi neé Poldermann; Péter Görög; Katalin Grasser; Ibolya Kosóczky; Ágnes Korács neé Palotay, and Lujza Petöcz, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Apr. 16, 1981, Ser. No. 254,763
Claims priority, application Hungary, Apr. 18, 1980, 939
Int. Cl.³ C07D *471/04;* A61K *31/395*
U.S. Cl. 424—249 13 Claims

1. A compound of the formula



or a pharmaceutically effective salt thereof, wherein R is C_{1-12} alkyl; or is phenyl or phenyl-C_1–C_4 alkyl wherein the phenyl can be substituted with 1 to 3 C_{1-4} alkyl or C_{1-4} alkoxy substituents; X_1 is hydrogen, C_{1-6} alkanoyl or C_{1-6} haloalkanoyl; X_2 and X_3 are hydrogen or C_{1-6} alkanoyl; and when X_1 is hydrogen, X_2 and X_3 are not simultaneously hydrogen.

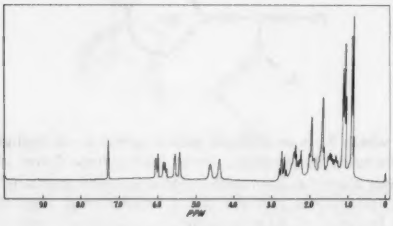
9. An antiphlogistic, analgesic, anticonvulsive or tranquillizing method of treatment which comprises administering to a patient susceptible to such treatment an effective amount of a compound as defined in claim 1.

4,342,767

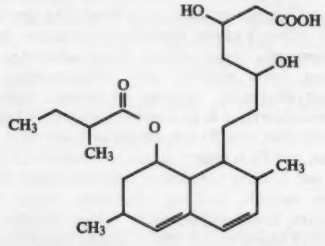
HYPOCHOLESTEREMIC FERMENTATION PRODUCTS

George Albers-Schonberg, Princeton; Richard L. Monaghan, Somerset; Alfred W. Alberts, Short Hills, and Carl H. Hoffman, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 114,459, Jan. 23, 1980, abandoned, which is a continuation-in-part of Ser. No. 48,946, Jun. 15, 1979, Pat. No. 4,231,938. This application Jun. 16, 1980, Ser. No. 159,983
Int. Cl.³ A61K *31/22;* C07C *69/74*
U.S. Cl. 424—250 12 Claims



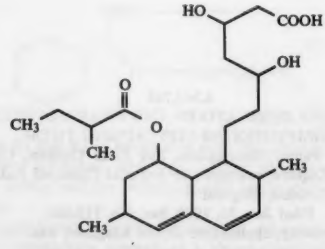
1. The compound:



II

or a pharmaceutically acceptable salt or a lower alkyl ester or a substituted lower alkyl ester wherein the substituent is phenyl, dimethylamino, or acetylamino.

7. An antihypercholesteremic pharmaceutical composition comprising a pharmaceutical carrier and an effective amount of the compound:



II

or a pharmaceutically acceptable salt or a lower alkyl ester or a substituted lower alkyl ester wherein the substituent is phenyl, dimethylamino, or acetylamino.

4,342,768

BIS-ESTERS OF 1,1-ALKANEDIOLS WITH 6-BETA-HYDROXYMETHYLPENICILLANIC ACID 1,1-DIOXIDE AND BETA-LACTAM ANTIBIOTICS

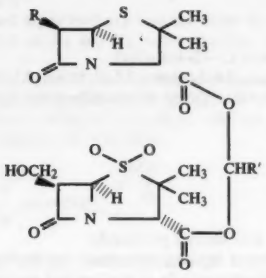
Michael S. Kellogg, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 86,864, Oct. 22, 1979, Pat. No. 4,287,181. This application Mar. 23, 1981, Ser. No. 246,505

Int. Cl.[3] A61K *31/495;* C07D *499/74, 499/76*

U.S. Cl. 424—250 12 Claims

1. A compound of the formula



and the pharmaceutically-acceptable salts thereof, wherein R is 2-phenylacetamido, 2-phenoxyacetamido, D-2-amino-2-phenylacetamido, D-2-amino-2-(4-hydroxyphenyl)-acetamido, 2-carboxy-2-phenylacetamido, 2-carboxy-2-(2-thienyl-)acetamido, 2-carboxy-2-(3-thienyl)acetamido, D-2-(4-ethyl-2,3-dioxopiperazinocarbonylamino)-2-phenylacetamido or 2,2-dimethyl-4-phenyl-5-imidazolidinon-1-yl; and R′ is hydrogen or methyl.

11. A pharmaceutical composition suitable for treating a bacterial infection in a mammalian subject which comprises an antibiotically effective unit dosage amount of a compound of claim 1 and a pharmaceutically-acceptable carrier.

4,342,769

2-[(METHYLSULFINYL)ACETYL]-3-HETEROCYCLICINDOLES AND DERIVATIVES THEREOF AS IMMUNOSUPPRESSANTS

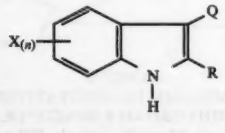
Martin Steinman, Livingston, and Pirouz Tahbaz, Cedar Grove, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 947,979, Oct. 2, 1978, Pat. No. 4,225,711. This application Apr. 25, 1980, Ser. No. 143,700

Int. Cl.[3] A61K *31/50;* C07D *403/04*

U.S. Cl. 424—251 24 Claims

1. An pharmaceutical composition therapeutically useful in immunosuppression and arthritis comprising a therapeutically effective amount of a compound of the formula



wherein X is halogeno, n is an integer of zero to three, R is methylsulfinylacetyl, methylsulfonylacetyl, methylthiohydroxyacetyl, methylthioalkoxyacetyl wherein the alkoxy group has one to six carbon atoms, methylsulfinylhydroxyethyl or methylsulfonylhydroxyethyl and Q is selected from the group consisting of pyridyl, oxazolyl, isoxazolyl, pyrimidinyl, pyridazinyl, pyrazinyl, pyrazolyl, imidazolyl, thiazolyl, isothiazolyl, thienyl, furanyl and pyrrolyl, together with a pharmaceutically acceptable carrier.

4,342,770

OPTICALLY ACTIVE ISOMERS OF SUBSTITUTED PYRIDINE METHYL ESTERS OF CYCLOPROPANE CARBOXYLIC ACID AND THEIR USE AS INSECTICIDES

David P. Clifford, and Robert A. Sewell, both of King's Lynn, England, assignors to Dow Chemical Company Limited, Norfolk, England

Filed Jun. 20, 1980, Ser. No. 161,532

Int. Cl.[3] C07D *213/70, 213/64;* A61K *31/44*

U.S. Cl. 424—263 9 Claims

7. A method for the kill and control of insects which comprises contacting said insects or their habitat with a composition comprising an inert carrier in intimate admixture with an insecticidally effective amount of an optically active dextrorotatory (d) form of an isomer of the compound 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropane carboxylic acid:cyano(6-phenoxy-2-pyridinyl)methyl ester.

4,342,771

HYPOGLYCEMIC 5-SUBSTITUTED OXAZOLIDINE-2,4-DIONES

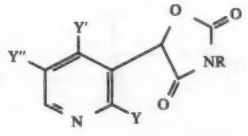
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 222,202, Jan. 2, 1981, which is a continuation-in-part of Ser. No. 173,206, Jul. 28, 1980, abandoned. This application Apr. 23, 1981, Ser. No. 252,962

Int. Cl.[3] C07D *413/04;* A61K *31/44*

U.S. Cl. 424—263 21 Claims

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein

R is hydrogen, (C_1–C_4)-alkanoyl, benzoyl, (C_2–C_4)-carbalkoxy, (C_1–C_3)-alkylcarbamoyl, (C_5–C_7)-cycloalkylcarbamoyl or di(C_1–C_3)-alkylcarbamoyl;

Y is hydrogen or (C_1–C_3)alkoxy,

Y′ is hydrogen or (C_1–C_3)alkyl; and

Y″ is hydrogen or halo.

8. A method of lowering the blood glucose in a hyperglycemic mammal which comprises administering to a mammal in need of such treatment a blood glucose lowering amount of a compound of claim 1.

4,342,772

β-LACTAM COMPOUNDS, ANTIBACTERIAL COMPOSITIONS THEREOF AND METHOD OF USE

Wagn O. Godtfredsen, Vaerlose, and Welf von Daehne, Rungsted Kyst, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

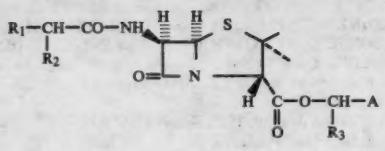
Continuation-in-part of Ser. No. 118,063, Jan. 24, 1980. This application Dec. 4, 1980, Ser. No. 213,083

Claims priority, application United Kingdom, Feb. 13, 1979, 7905020; Jun. 19, 1979, 7921341; Aug. 9, 1979, 7927761; Nov. 14, 1979, 7939473

Int. Cl.[3] A61K *31/43;* C07D *499/68, 499/70*

U.S. Cl. 424—271 20 Claims

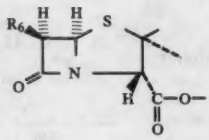
1. A compound of the formula I:



I

in which R_1 stands for a phenyl, 4-hydroxyphenyl, 1,4-cyclohexadienyl or a 3-thienyl group; R_2 represents a primary amino or a carboxy group; R_3 is a hydrogen atom, or a lower alkyl, aryl or aralkyl radical, and A stands for a radical of a β-lactamase inhibitor containing a β-lactam ring as well as a carboxy group, A being connected via the carboxy group, and salts of the compound of formula I with pharmaceutically acceptable, non-toxic acids or bases, said A substituent being a radical selected from group consisting of:

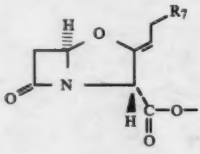
(a) a radical of the formula III:



III

in which R_6 stands for a halogen atom; and

(b) a radical of the formula IV:



IV

in which R_7 stands for a hydroxy group, or one of the radicals of known clavulanic acid derivatives with β-lactamase inhibitory activity.

14. An antibacterial pharmaceutical composition in dosage unit form for external parenteral or topical treatment of patients suffering from infectious diseases, which comprises as an active ingredient 0.025 g to 2.5 g of a compound as claimed in claim 1 together with an atoxic pharmaceutically acceptable carrier.

4,342,773

N-ARYL-1,3-OXAZOLIDINE-2,4-DIONES EXERTING A FUNGICIDAL, SYSTEMIC ACTION IN THE FIELD

Vincenzo Di Toro, Como; Franco Gozzo, S. Donato Milanese; Mirella Cecere, Milan; Simone Lorusso, San Giuliano Milanese, and Carlo Garavaglia, Cuggiono, all of Italy, assignors to Montedison S.p.A., Italy

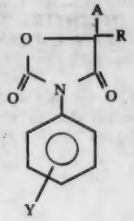
Continuation-in-part of Ser. No. 13,404, Feb. 21, 1979, abandoned. This application Feb. 26, 1980, Ser. No. 124,733

Claims priority, application Italy, Feb. 24, 1978, 20579 A/78

Int. Cl.³ A01N *43/76*; C07D *263/04*

U.S. Cl. 424—272 **14 Claims**

1. An antifungal N-aryl-1,3-oxazolidine-2,4-dione, having systemic activity and improved usefulness in the field, of the formula:



wherein:

R=C_1–C_5 alkyl; C_1–C_5-haloalkyl;

Y=H; halogen; 3,4-dichloro; 3,5-dichloro; 3,5-difluoro; 3,5-dimethyl; 3,5-dimethoxy; 3,5-bis-trifluoromethyl; and

A=

wherein R is as defined previously.

2. A method of fighting infestations due to fungi in useful plants, consisting essentially of treating said useful plants with a compound of claim 1, present in a solution containing said compound functioning as the active ingredient and present in an amount of at least 0.1% o.

4,342,774

N-ACYLCARNOSINE ALUMINUM SALT, ITS PREPARATION, AND A DIGESTIVE ULCER REMEDY CONTAINING SUCH SALT

Susumu Okabe, Kyoto; Takashi Sonehara, Mitaka; Masaru Sato, Koshigaya, and Mitsuo Mazaki, Chiba, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

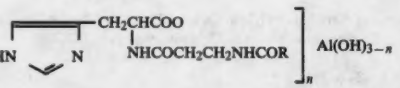
Filed Sep. 10, 1980, Ser. No. 185,774

Claims priority, application Japan, Sep. 13, 1979, 54-116717

Int. Cl.³ A61K *33/06*; C07D *233/64*

U.S. Cl. 424—273 R **15 Claims**

1. An N-acylcarnosine aluminum salt of the formula (I),



(I)

where in R represents a lower alkyl group having 1 to 6 carbon atoms, a phenyl group or a lower alkoxy group-substituted phenyl group, and n represents an integer of 1 to 3.

4,342,775

3-(1-IMIDAZOLYL)-DERIVATIVES OF 2,3-DIHYDRO-4H-1-BENZOPYRAN

Paolo Cozzi; Nicola Mongelli; Antonio Pillan, all of Milan; Maria Bergamaschi, Fiorenzuola d'Arda, and Pier P. Lovisolo, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

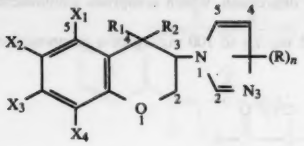
Filed Feb. 12, 1981, Ser. No. 233,961

Claims priority, application United Kingdom, Mar. 4, 1980, 8007336; Jan. 29, 1981, 8102741

Int. Cl.³ C07D *405/04*; A61K *31/33, 31/415*

U.S. Cl. 424—273 R **76 Claims**

1. Compounds having the general formula (I)



(I)

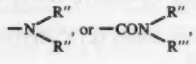
wherein

R is C_1–C_6 alkyl;

n is 0, 1, 2 or 3

one of R_1 and R_2 is hydroxy and the other is hydrogen or C_1–C_6 alkyl, or R_1 and R_2, taken together, form an oxo group;

each of X_1, X_2, X_3 and X_4, which may be the same or different, is hydrogen; halogen; hydroxy; $-NO_2$; —CN; C_1–C_6 alkyl; C_1–C_6 alkoxy; trihalo-C_1–C_6 alkyl; -SR′ or -COOR′, R′ being hydrogen or C_1–C_6 alkyl;



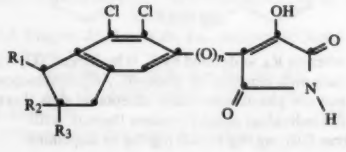
each of R″ and R‴, which may be the same or different, being hydrogen or C_1–C_6 alkyl; or one of X_1, X_2, X_3 and X_4 is phenyl, phenylthio, phenoxy or benzyl, the phenyl, phenylthio, phenoxy and benzyl groups being unsubstituted or substituted by halogen, C_1–C_6 alkyl, C_{1-6} alkoxy, or -SR′, wherein R′ is as defined above, and the others are as defined above; or any two adjacent X_1, X_2, X_3 and X_4 groups, taken together, complete a saturated or unsaturated 6-membered carbocyclic ring fused to the benzene ring shown in formula (I), the carbocyclic ring being unsubstituted or substituted by one or more groups selected from halogen, C_1–C_6 alkyl, C_{1-6} haloalkyl, C_1–C_6 alkoxy or —SR′, wherein R′ is as defined above, and any groups X_1 to X_4 not participating in the completion of such a fused ring are as defined above, or a pharmaceutically acceptable salt thereof.

4,342,776
4-SUBSTITUTED-3-HYDROXY-3-PYRROLINE-2,5-DIONE INHIBITORS OF GLYCOLIC ACID OXIDASE

Edward J. Cragoe, Jr., Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Haydn W. R. Williams, Dollard des Ormeaux, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 5, 1979, Ser. No. 91,294
Int. Cl.³ A61K *31/40*; C07D *207/416*
U.S. Cl. 424—274 **11 Claims**

1. The compounds having the structure:



wherein

n is 0 or 1;

R_1 is —OH or =O;

R_2 is loweralkyl containing 1 to 3 carbons;

R_3 is loweralkyl containing 1 to 3 carbons cycloloweralkyl containing 4 to 6 carbons, with the proviso that when n is 1, R_1 is not=O or pharmaceutically acceptable salts thereof.

9. A method of treating persons afflicted with calcium oxalate kidney or bladder stones or preventing the formation of calcium oxalate kidney or bladder stones which comprises administering to such a patient an effective amount of a compound of claim 1.

4,342,777
POLYBUTYLBENZYLPHENOLS AND BENZYL-3,4-METHYLENEDIOXYBENZENES IN INSECT POPULATION CONTROL

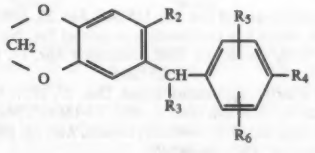
Leonard Jurd, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 25,132, Mar. 29, 1979. This application Nov. 5, 1981, Ser. No. 318,531
Int. Cl.³ A01N *43/16*
U.S. Cl. 424—282 **6 Claims**

1. A method of inhibiting growth of mosquito larvae, which comprises

administering to said larvae an effective growth-inhibiting amount of a compound selected from the group consisting of

(a) compounds of the structure



wherein R_2 is hydrogen, lower alkyl containing from 1 to 6 carbon atoms, lower alkoxy containing from 1 to 6 carbon atoms, or lower alkenyl containing from 2 to 6 carbon atoms,

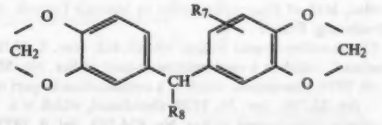
R_3 is hydrogen or lower alkyl containing from 1 to 6 carbon atoms,

R_4, R_5, and R_6 are independently hydrogen, lower alkyl containing from 1 to 6 carbon atoms, and lower alkoxy containing from 1 to 6 carbon atoms, and

wherein, if R_2 is hydrogen, then R_5 and R_6 must be independently lower alkyl containing from 1 to 6 carbon atoms or lower alkoxy containing from 1 to 6 carbon atoms, and

wherein, if R_4, R_5, and R_6 are hydrogen and R_3 is methyl, then R_2 must be alkoxy containing from 2 to 5 carbon atoms, and

(b) compounds of the structure



wherein R_7 is lower alkyl containing 1 to 6 carbon atoms or lower alkoxy containing from 2 to 6 carbon atoms or lower alkenyl containing from 2 to 6 carbon atoms and

R_8 is hydrogen or lower alkyl containing from 1 to 6 carbon atoms.

4,342,778
INSECTICIDAL (2,3-DIHYDRO-2,2-DIMETHYLBENZOFURAN-7-YLOXY-N-METHYLCARBAMOYL)-(N'-ALKOXYCARBAMOYL)-SULPHIDES

Jozef Drabek, Oberwil, Switzerland, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

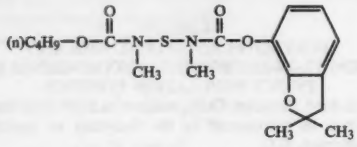
Continuation of Ser. No. 958,302, Nov. 6, 1978, abandoned, which is a continuation of Ser. No. 887,271, Mar. 16, 1978, abandoned. This application May 1, 1979, Ser. No. 35,048

Claims priority, application Switzerland, Mar. 25, 1977, 3808/77; Jan. 31, 1978, 1039/78

Int. Cl.³ A01N *47/10*; C07D *307/86*

U.S. Cl. 424—285 **3 Claims**

1. The compound of the formula



3. A method of controlling insects at a locus which method comprises applying to said locus an insecticidally effective amount of the compound of claim 1.

4,342,779
7-ACETYLSPIROBENZOFURANONE COMPOUND

Hirosada Sugihara, Osaka; Masazumi Watanabe; Mitsuru Kawada, both of Hyogo, and Isuke Imada, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 115,548, Jan. 25, 1980, Pat. No. 4,284,644, which is a continuation-in-part of Ser. No. 968,520, Dec. 11, 1978, abandoned. This application Apr. 17, 1981, Ser. No. 257,316

Claims priority, application Japan, Dec. 27, 1977, 52-159177; Jun. 19, 1978, 53-74700; Nov. 6, 1978, 53-136967; May 4, 1979, 54-55082; Jun. 25, 1979, 54-80551; Greece, Apr. 23, 1980, 61757; Japan, Mar. 30, 1981, 56-48286

The portion of the term of this patent subsequent to Aug. 18, 1998, has been disclaimed.

Int. Cl.³ A61K *31/34*; C07D *307/94*

U.S. Cl. 424—285 **3 Claims**

1. 7-Acetylspiro[benzo[b]furan-2(3H), 1'-cyclopropane]-3-one.

3. A method of managing peptic ulcer in a patient which comprises administering to said patient 7-acetylspiro[benzo[b-]furan-2(3H), 1'-cyclopropane]-3-one, said compound being administered in an amount effective to manage peptic ulcer in said patient.

4,342,780
METHOD OF DEPLETING ENDOGENOUS MONOAMINES

Philippe Bey, Strasbourg, and Michel Jung, Illkirch-Graffenstaden, both of France, assignors to Merrell-Toraude et Cie, Strasbourg, France

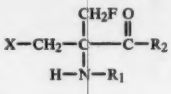
Continuation-in-part of Ser. No. 91,463, Nov. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 58,475, Jul. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 33,719, Apr. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 814,243, Jul. 8, 1977, abandoned. This application Feb. 17, 1981, Ser. No. 235,275

Int. Cl.³ A61K *31/195*

U.S. Cl. 424—319 **19 Claims**

1. A method for selectively depleting endogenous central nervous system monoamines useful for controlling certain neuropsychiatric disorders in mammals in need thereof, said disorders consisting of schizophrenia, mania, tardive dyskinesia, anxiety, or depression, which comprises administering to said mammals:

(a) from 0.25 mg/kg to 100 mg/kg of a compound of the formula:



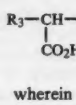
I

wherein:

R_1 is hydrogen, (C_1–C_4alkyl)carbonyl, or

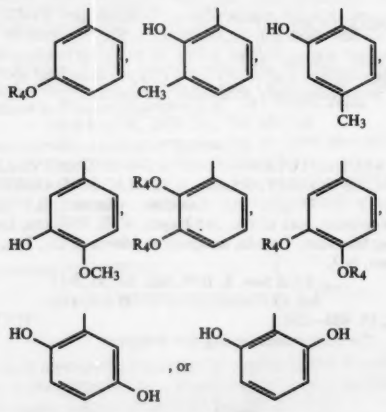
wherein R_3 is hydrogen, C_1–C_8alkyl, benzyl, or 4-hydroxybenzyl;

R_2 is hydroxy, C_1–C_8 alkoxy, amino, (C_1–C_4alkyl)amino, di(C_1–C_4alkyl)amino, or



wherein R_3 is hydrogen, C_1–C_8alkyl, benzyl, or 4-hydroxybenzyl;

X is a substituted phenyl group of the formula:



wherein R_4, as defined by X, is hydrogen, (C_1–C_4alkyl)-carbonyl, benzoyl, or phenyl(C_1–C_6alkylene)carbonyl; and the pharmaceutically acceptable salts thereof; and the individual optical isomers thereof; with

(b) from 0.01 mg/kg to 100 mg/kg to dopamine.

4,342,781
DIPHENYLPROPENAMIDES AS SRS-A ANTAGONISTS

Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

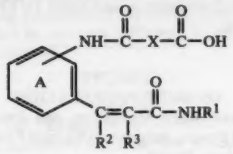
Filed May 29, 1981, Ser. No. 268,439

The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.

Int. Cl.³ A61K *31/24*; C07C *101/453*

U.S. Cl. 424—319 **17 Claims**

1. A diphenylpropenamide compound of the formula



and the pharmaceutically-acceptable salts thereof;

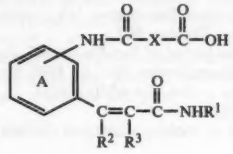
wherein R^1 is selected from the group consisting of alkyl having from 8 to 15 carbons and cycloalkyl having from 6 to 12 carbons;

X is selected from the group consisting of cis-vinylene, ethylene and propylene;

and R^2 and R^3 are each selected from the group consisting of hydrogen and phenyl;

with the proviso that R^2 and R^3 must always be different.

16. A method of antagonizing the effect of slow-reacting substance of anaphylaxis in a human subject, which comprises administering to said human subject a slow-reacting substance of anaphylaxis antagonizing amount of a diphenylpropenamide compound of the formula



or a pharmaceutically acceptable salt thereof;

wherein R^1 is selected from the group consisting of alkyl having from 8 to 15 carbons and cycloalkyl having from 6 to 12 carbons;

X is selected from the group consisting of cis-vinylene, ethylene and propylene;

and R^2 and R^3 are each selected from the group consisting of hydrogen and phenyl;

with the proviso that R^2 and R^3 must always be different.

4,342,782

1-(SUBSTITUTED-AMINOALKOXYPHENYL)-2-METHYLENE-1-ALKANONES, COMPOSITIONS AND USE THEREOF

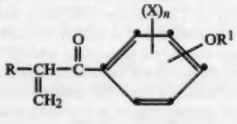
Edward J. Cragoe, Jr., Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 16, 1978, Ser. No. 961,422

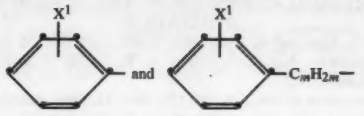
Int. Cl.³ A61K *31/135*; C07C *97/10*

U.S. Cl. 424—330 **14 Claims**

1. A compound of the general formula:

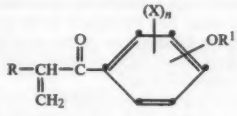


wherein R is lower alkyl, trihalomethyl substituted lower alkyl, cycloalkyl containing from 3 to 6 carbon atoms or the radicals

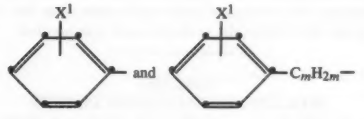


in which X^1 is hydrogen, halogen or lower alkyl and m is an integer from 1 to 5; X is hydrogen, lower alkyl, halogen or when taken together two X radicals on adjacent carbon atoms of the benzene ring to which they are attached may be joined to form the 1,3-butadienylene linkage; n is an integer from 1 to 4; and R^1 is diloweralkylaminoloweralkyl, and their pharmaceutically acceptable acid addition salts.

11. A method of treating patients having allergic conditions which consists of administering to such patient a pharmaceutically acceptable dose of a compound of the formula:



wherein R is lower alkyl, trihalomethyl substituted lower alkyl, cycloalkyl containing from 3 to 6 carbon atoms or the radicals



in which X^1 is hydrogen, halogen or lower alkyl and m is an integer from 1 to 5; X is hydrogen, lower alkyl, halogen or when taken together two X radicals on adjacent carbon atoms of the benzene ring to which they are attached may be joined to form the 1,3-butadienylene linkage; n is an integer from 1 to 4; and R^1 is diloweralkylaminoloweralkyl, and their pharmaceutically acceptable acid addition salts.

4,342,783

ANTI-GLAUCOMA AGENT

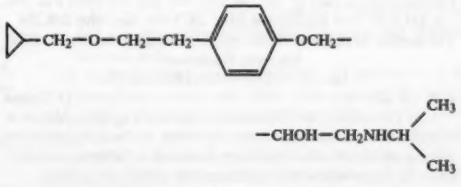
Paolo L. Morselli, Meudon Bellevue, France; Louis De Santis, Jr., and Robert Adamski, both of Fort Worth, Tex., assignors to Synthelabo, Paris, France

Filed Jun. 30, 1980, Ser. No. 164,223

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **3 Claims**

1. A method of treating glaucoma in a patient which comprises administering topically to the eye of said patient a compound of the formula:



or a pharmaceutically acceptable salt thereof in the form of a racemate or optical isomer thereof in an amount effective to treat glaucoma by reducing interocular pressure.

4,342,784

CHEMICAL COMPOSITIONS AND METHOD OF UTILIZATION

Ruth N. Havemeyer, Palo Alto, Calif., and Gilman N. Cyr, Piscataway, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 783,120, Dec. 11, 1968, abandoned, which is a continuation-in-part of Ser. No. 401,963, Oct. 6, 1964, abandoned. This application Jun. 12, 1972, Ser. No. 261,844

Int. Cl.[3] A61K *31/10, 31/60, 31/58, 31/74*

U.S. Cl. 424—337 3 Claims

1. A method of administering liquid dimethylsulfoxide cutaneously and topically to humans and animals in amounts effective for therapeutic action without having the dimethylsulfoxide run off the skin and without causing significant irritation of the skin, said method comprising

(a) applying to the surface of the skin at and surrounding the site of the disorder being treated an ionicly sensitive, semi-solid gel consisting essentially of

(i) a mixture of dimethylsulfoxide and water wherein the dimethylsulfoxide is present in a concentration of about 99.8% to about 10% by weight in the gel composition,

(ii) carboxy polymethylene water-soluble resin in an amount from about 0.2% to about 20.0% by weight of the gel composition and,

(iii) a neutralizing agent selected from the group consisting of triethanolamine, N-methylglucamine, sodium hydroxide, triethylamine, or monoethanolamine; and

(b) maintaining said semi-solid gel in contact with said skin for a period sufficient to enable the salt normally present at the surface of the skin to gradually break the semi-solid gel composition and thereby slowly release the liquid mixture of dimethylsulfoxide and water over the surface of the skin where the semi-solid gel was applied.

4,342,785

PROCESS FOR MATURING LEAVEN

Johann Zwingl, Vienna, and Heinrich Heckmann, Baden, both of Austria, assignors to Vereinigte Nahrungsmittel-industrie Aktiengesellschaft, Vienna, Austria

Filed Mar. 17, 1980, Ser. No. 130,966

Claims priority, application Austria, Mar. 22, 1979, 2143/79

Int. Cl.[3] A21D *8/00*

U.S. Cl. 426—19 14 Claims

1. A staged process for maturing leaven for bread-making comprising in a first stage the steps of pressurizing immature leaven, introducing the pressurized leaven in the form of a dough strand into an elongated, essentially closed, tubular cavity, completely filling the cavity with the leaven, fermenting the leaven in the tubular cavity, cooling the matured leaven during its passage through the cavity as the matured leaven passes at least one portion of the cavity length, and in a second stage comprising the step of further fermenting the matured leaven.

4,342,786

METHOD FOR FERMENTING VEGETABLES

Moshe Raccach, Tempe, Ariz., assignor to Microlife Technics, Inc., Sarasota, Fla.

Continuation-in-part of Ser. No. 114,760, Jan. 24, 1980, Pat. No. 4,303,679. This application May 29, 1981, Ser. No. 268,356

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.[3] A23B *7/10;* A23L *1/218*

U.S. Cl. 426—52 16 Claims

1. In the method for fermenting vegetables by the addition of a lactic acid producing bacterium to an acidic brine solution having an initial pH of less than about 4.8 to ferment carbohydrate in the solution the improvement which comprises:

providing an effective concentration of a food grade metal salt stimulated *Pediococcus pentosaceus* in the brine which can effectively and rapidly remove carbohydrate in the brine at a temperature of less than about 25° C. wherein the *Pediococcus pentosaceus* are provided in the brine as a concentrate containing at least about 1×10^7 cells per ml of concentrate.

4,342,787

DESSERT PREPARATION

Paul Rebaudieres, Rueil Malmaison, and Jean-Michel Azzi, Paris, both of France, assignors to General Foods France S.A., Rueil Malmaison, France

Filed Jan. 7, 1980, Ser. No. 110,271

Int. Cl.[3] A23L *1/195*

U.S. Cl. 426—103 7 Claims

1. A dessert preparation which comprises a mixture of an instant pudding powder with about 80–95% by weight of the preparation of a food material selected from the group consisting of expanded starch based cereals such as rice, wheat, and corn; freeze-dried and air-dried fruits, and expanded nuts; said food material having a texture different from that of the instant pudding powder and having thereon a coating selected from the group of coatings consisting of chocolate, high-fat toffee mixture and confectioner's varnish; said coating rendering the coated food material substantially nonabsorptive of moisture.

4,342,788

METHOD OF COOKING CHICKEN PARTS

Kenneth A. Clatfelter, Farmington, Ark., assignor to Campbell Soup Company, Camden, N.J.

Continuation-in-part of Ser. No. 44,465, Jun. 1, 1979, abandoned. This application Nov. 14, 1980, Ser. No. 206,900

Int. Cl.[3] A23L *1/315*

U.S. Cl. 426—243 5 Claims

1. The methd of cooking a battered chicken part, comprising:

a. subjecting said battered chicken part to a first cooking in hot cooking oil only, without microwave energy, and at a temperature sufficiently high, and at least about 340° F., and for a period of time sufficiently long, and at least about 3 minutes, to dehydrate and brown the batter and to partially cook the interior meat of the chicken part to a temperature of from about 100° to 150° F., but insufficient to cook the interior meat completely; and

b. thereafter subjecting said chicken part while completely immersed in hot cooking oil to high intensity microwave energy for a period of time of less than about 1.5 minutes at a microwave power level at least 5 kilowatts sufficient to raise the temperature of said interior meat to at least about 160° F. and complete cooking of said interior meat.

4,342,789

PROCESS FOR INHIBITING GROWTH OF *CLOSTRIDIUM BOTULINUM* AND FORMATION OF NITROSAMINES IN MEAT

Ryuzo Ueno, Nishinomiya; Toshio Matsuda, Itami; Shigeo Inamine, Kobe; Tatsuo Kanayama, Takarazuka, and Yatsuka Fujita, Nishinomiya, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

Filed Jul. 1, 1980, Ser. No. 165,077

Claims priority, application Japan, Sep. 7, 1979, 54-114110; Jun. 5, 1980, 55-74983

Int. Cl.[3] A23B *4/02, 4/14*

U.S. Cl. 426—266 13 Claims

1. A process for producing ham and bacon from pork meat in which growth of *Clostridium botulinum* and formation of nitrosamines are inhibited and in which formation of mutagens is avoided, which comprises separately adding to the meat (A) a liquid additive composition consisting essentially of at least one preservative selected from the group consisting of potassium sorbate and sorbic acid or a powdery additive composition consisting essentially of potassium sorbate and (B) a liquid or powdery nitrite curing agent, by injection, spraying, daubing or dipping for adding the liquid, or by spraying or rubbing for adding the powder, under conditions such that the nitrite

does not come into contact with the preservative thus preventing the nitrite and preservative from reacting with each other thereby avoiding formation of mutagens, components (A) and (B) being added in amounts sufficient to inhibit growth of *Clostridium botulinum.*

4,342,790

METHOD OF PRODUCING MINCED FISH MEAT

Naboru Katoh; Kazumiya Komatsu, and Hisashi Nozaki, all of Sayama, Japan, assignors to Kibun Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 231,943, Feb. 5, 1981, Pat. No. 4,303,685, which is a continuation of Ser. No. 52,941, Jun. 28, 1979, abandoned. This application Mar. 26, 1981, Ser. No. 247,712

Claims priority, application Japan, Dec. 12, 1978, 53-152705

Int. Cl.³ A22C *25/14, 25/16*

U.S. Cl. 426—332 **3 Claims**

2. A method of producing minced fish meat comprising separating the meat from the whole fish whose heads and organs have been removed, blocks of such fish, or fillets of such fish, while substantially avoiding rapid deterioration caused by breakdown of meat cells during meat separation by showering the fish with an aqueous solution containing 0.1–20% of at least one member selected from the group consisting of sorbitol, dextrin, sucrose, sodium glutamate, glycine, sodium bicarbonate, sodium carbonate, disodium phosphate and sodium polyphosphate, and then bleaching the obtained fish meat by use of an aqueous solution containing at least one member selected from the group consisting of sorbitol, dextrin, sucrose, sodium glutamate, glycine, sodium bicarbonate, sodium carbonate, disodium phosphate and sodium polyphosphate.

4,342,791

METHOD OF PURIFYING ISO-α-ACIDS

Charles D. Baker, Uttoxeter, England, assignor to Brewing Patents Limited, Great Britain

Filed May 21, 1980, Ser. No. 152,150

Claims priority, application United Kingdom, May 24, 1979, 7918074

Int. Cl.³ C12C *3/00*

U.S. Cl. 426—600 **9 Claims**

1. A method of treating a starting aqueous solution containing iso-α-acids and β-acids derived from hops at a pH greater than 9, which method comprises first, if the starting solution is too concentrated, bringing it to an iso-α-acid concentration of from 0.5% to 10% */w, then reducing the pH to a value in the range 7 to 10, the iso-α-acid concentration and the pH being chosen, having regard to the molar ratio of iso-α-acid to other anions in the solution, so as to form a precipitate of β-acids which may be readily filtered to give a clear filtrate, separating an aqueous solution of the iso-α-acids from the precipitated β-acids, and concentrating the separated aqueous solution to an iso-α-acid concentration in the range 5% to 60% by weight to the extent that a phase separation takes place into two aqueous phases of which one contains a higher concentration of iso-α-acids than the other.

4,342,792

ELECTRODES AND METHOD OF PREPARATION THEREOF FOR USE IN ELECTROCHEMICAL CELLS

David E. Brown, Weybridge; Stephen M. Hall, Feltham, and Mahmood N. Mahmood, Walton-On-Thames, all of England, assignors to The British Petroleum Company Limited, London, England

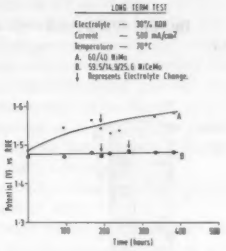
Filed May 11, 1981, Ser. No. 262,415

Claims priority, application United Kingdom, May 13, 1980, 8015797

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—34 **10 Claims**

1. A method of producing electrodes having electrocatalysts deposited thereon comprising coating a metal electrode substrate with a homogeneous solution of a plurality of metal compounds each of which compound, when not an oxide, being capable of thermal decomposition to the corresponding oxide, thermally decomposing the metal compounds, other than the oxides, to the corresponding oxides or mixed oxides and curing the oxide-coated substrate in a reducing atmosphere



at an elevated temperature, characterised in that the homogeneous solution comprises compounds of (a) at least one metal selected from a first group of iron, cobalt, manganese and nickel, (b) at least one metal selected from a second group of molybdenum, vanadium and tungsten and (c) at least one rare earth metal selected from the group of lanthanides having an atomic number of 57–71 inclusive.

4,342,793

INTERPENETRATING DUAL CURE RESIN COMPOSITIONS

Earl Skinner, Wayzata; Marvin Emeott, Lake Elmo, and Allan Jevne, Anoka, all of Minn., assignors to Henkel Corporation, Minneapolis, Minn.

Continuation of Ser. No. 945,370, Sep. 25, 1978, abandoned, which is a continuation of Ser. No. 759,311, Jan. 14, 1977, Pat. No. 4,128,600. This application Sep. 29, 1980, Ser. No. 191,802

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—44 **12 Claims**

1. A method for forming an interpenetrated urethane linked coating composition on a substrate involving the steps of radiation and thermal curing by:

(a) preparing a mixture containing:

(1) from about 40 percent to about 90 percent by weight of a saturated polyol; and

(2) from about 10 percent to about 60 percent by weight of a reactive diluent having a radiation sensitive pi bond and a boiling point greater than benzene and mixtures thereof; and

(3) from about 80 percent to about 120 percent on a hydroxyl-isocyanate equivalent basis of a polyisocyanate;

(b) applying the mixture to a substrate subjecting the coating so formed to sufficient radiation to polymerize the reactive diluent thereby partially curing the coating; and

(c) then exposing the partially cured coating of (b) to sufficient thermal energy to form the urethane link,

thereby forming the interpenetrated cured coating on the substrate.

4,342,794

METHOD OF AND APPARATUS FOR PRODUCING ELECTRICAL CONDUCTOR WIRE

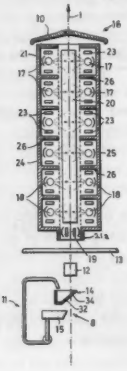
Wolfgang Völker; Fritz Pohlmann, and Friedrich Radeck, all of Arolsen, Fed. Rep. of Germany, assignors to Felten & Guilleaume Carlswerk AG, Cologne, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,858

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1978, 2843895

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 21 Claims



1. A method of producing electrical conductor wires, especially profiled heavy wires, having the steps of providing a vertical supporting frame supported on a platform and including at least two sets of guide pulleys arranged in longitudinal direction so that one set of guide pulleys is provided at a distance to the platform on one end of the supporting frame, and the other set of guide pulleys is provided on the top of the supporting frame; applying varnish onto the conductor wire in applying means above the one set of guide pulleys in separated tanks each provided with throughopenings for the wire to be coated; calibrating the thickness of the varnished layer by stripping off superfluous varnish in calibrating means directly above the applying means and each being associated with one individual tank; hardening the applied and calibrated varnish in a hardening chamber arranged between the other set of guide pulleys and the calibrating means, wherein the improvement comprises: applying the varnish onto the conductor wire in the tanks in groups or of laterally disposed individual tanks; hardening the applied and calibrated varnish by ultraviolet radiation by at least a first pair of ultraviolet radiators within the hardening chamber and disposed transversely to the guide motion of the wires, and at least a second pair of ultraviolet radiators located parallel above the first pair of ultraviolet radiators and having a higher intensity of radiation than the first pair of ultraviolet radiators; intensifying and reflecting the radiation by a first group of reflectors each provided behind each ultraviolet radiator and a second group of reflectors each arranged equi-distantly between two wires, the reflectors being perpendicular to the longitudinal axis of the respective ultraviolet radiator; and cooling by cooling means connected to the hardening chamber to achieve an optimum temperature.

13. An apparatus for producing electrical conductor wires, especially profiled heavy wires, having a vertical supporting frame supported on a platform, the supporting frame including at least two sets of guide pulleys arranged in longitudinal direction, one set of guide pulleys being provided at a distance to the platform on one end of the supporting frame, the other set of guide pulleys being provided on the top of the supporting frame; means for applying varnish onto the conductor wire, the applying means being located above the one set of guide pulleys and having separated tanks each provided with through openings for the wire to be coated, means for calibrating the thickness of the varnished layer by stripping off superfluous varnish, the calibrating means being arranged directly above the applying means and each being associated with one individual tank, a hardening chamber arranged between the other set of guide pulleys and the calibrating means, wherein the improvement comprises: an arrangement of the tanks in groups or of laterally disposed individual tanks, at least a first pair of ultraviolet radiators within the hardening chamber and disposed transversely to the guide motion of the wires, at least a second pair of ultraviolet radiators located parallel above the first pair of ultraviolet radiators and having a higher intensity of radiation than the first pair of ultraviolet radiators, a first group of reflectors each provided behind each ultraviolet radiator for intensifying and reflecting the radiation, a second group of reflectors each arranged equi-distantly between two wires, the reflectors being perpendicular to the longitudinal axis of the respective ultraviolet radiator, and cooling means connected to the hardening chamber to achieve an optimum temperature.

4,342,795

SOLAR CELL METALLIZATIONS COMPRISING A NICKEL-ANTIMONY ALLOY

Sanford M. Marcus, Wilmington, and Joseph R. Rellick, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1980, Ser. No. 218,493

Int. Cl.³ B05D *3/02;* C23C *17/00*

U.S. Cl. 427—75 6 Claims

1. A thick film composition suitable for the metallization of a silicon solar cell which comprises an alloy of nickel and antimony dispersed in particle form in an organic vehicle in a concentration sufficient to make a printable paste.

4,342,796

METHOD FOR INHIBITING CORROSION OF INTERNAL STRUCTURAL MEMBERS OF REINFORCED CONCRETE

Roy N. Brown, Edmond, and Mike F. Stout, Yukon, both of Okla., assignors to Advanced Chemical Technologies, Inc., Oklahoma City, Okla.

Filed Sep. 10, 1980, Ser. No. 185,993

Int. Cl.³ B05C *1/16;* B05D *5/10*

U.S. Cl. 427—136 8 Claims

2. A method for inhibiting corrosion of reinforcing members in a paved concrete driving structure having a driving surface due to salt migration into the structure comprising:

providing a substantially dry driving surface of the structure;

contacting the substantially dry driving surface with an effective amount of an organo silane compound to provide an organo silane covered driving surface, the silane having the general formula:

$R\text{-}Si\text{-}(OR_1)_3$, wherein:

R is an alkyl group containing from 1 to about 30 carbon atoms, an alkenyl group, an aryl group, a cycloalkyl group, a cycloalkenyl group, an aralkyl group, or an aralkenyl group; and

R_1 is an alkyl group containing from 1 to about 8 carbon atoms, a hydroxyalkyl group, or an alkoxyalkyl group; and

permitting organo silane compound to migrate into the structure; and

reacting the organo silane in the structure with an effective amount of water to hydrolyze the organo silane in the structure and form a salt resisting barrier internally within the structure.

4,342,797

WET FLOW CHARACTERISTIC OF COAL AND OTHER WATER-INSOLUBLE SOLID PARTICLES

Alfred E. Kober, Bridgewater, and Mark O. Kestner, Mendham, both of N.J., assignors to Apollo Technologies, Inc., Whippany, N.J.

Filed Jul. 5, 1979, Ser. No. 55,029
Int. Cl.³ C09K 3/00
U.S. Cl. 427—220 25 Claims

1. The method of improving the flow characteristics of wet, small water-insoluble solid particles which comprises (a) forming wet particles which have a surface coating of a fluid having the property of lowering surface tension in aqueous solution, said fluid comprises a water solution of a substance from the group consisting of methyl and dimethyl naphthalene sulfonates and ethoxylated linear secondary (C_{11}–C_{15}) alcohols, said water solution having a low viscosity, a high flash point, low toxicity, and (b) causing said particles to flow from one location to another, whereby caking tendencies of the wet particles are inhibited and freedom of flow of said particles between said locations is enhanced.

4,342,798

PROCESS FOR PRODUCTION OF FLAME RESISTANT FOAM

Hans-Walter Illger, Roesrath; Manfred Dahm, Leverkusen, both of Fed. Rep. of Germany, and Alberto C. Gonzalez-Dörner, Polinya, Spain, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Division of Ser. No. 90,195, Nov. 1, 1979, Pat. No. 4,288,559.
This application May 15, 1981, Ser. No. 263,825
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849649
Int. Cl.³ B05D 5/00
U.S. Cl. 427—244 10 Claims

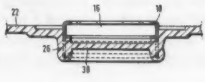
1. A process for the production of a flame resistant foam comprising spraying said foam with a dispersion comprising:
(a) a polyurethane latex;
(b) an aluminum hydroxide;
(c) an aluminosilicate and
(d) surface active substances.

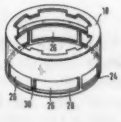
4,342,799

HOLLOW BODIES AND THEIR MANUFACTURE

Hans-Joachim Schwochert, Bonn-Holzlar, Fed. Rep. of Germany, assignor to Kautex-Maschinebau GmbH, Fed. Rep. of Germany

Filed Jun. 13, 1980, Ser. No. 159,252
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924198
Int. Cl.³ B29F 1/10; B65D 41/06; B29H 9/00
U.S. Cl. 428—35 18 Claims





1. A method of making hollow bodies, comprising the steps of:
providing a blow-mold having an inner surface conforming to a desired external shape for the hollow body, the inner surface having at least one continuous area;
providing an insert with an extending portion having at least one opening therein, the insert to be attached to the hollow body at the continuous area, the opening being aligned substantially perpendicular to the extending portion;
supporting the insert at the inner surface of the blow-mold in the continuous area, said extension extending inwards toward the hollow body, and said at least one opening defining an axis substantially parallel to the continuous inner surface of the mold and,
expanding a thermoplastic parison in the blow-mold and, during said expansion, causing wall portions of the parison to penetrate said at least one opening from opposite sides and to become heat-sealed together at said at least one opening and to enclose the regions of the insert surrounding the openings so as to produce a positive joint between the insert and the thermoplastic material.

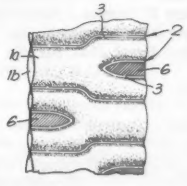
3. A hollow body comprising:
a continuous wall portion made of thermoplastic material;
at least one insert; and,
means positively securing said insert to said hollow body wall, said securing means comprising at least one opening in said insert, the at least one opening being in a part of the insert disposed substantially perpendicular to and intersecting the hollow body wall, the at least one opening defining an axis substantially parallel to the wall, and portions of the material forming said wall penetrating said at least one opening, said portions being heat-sealed together at and adjacent said opening, whereby regions of the insert surrounding such openings are embraced by said wall material portions.

4,342,800

POLYMERIC ARTICLES

Pushkumar D. Changani, Swindon; Donald G. Peacock, Kempsford, and David Roberts, Broome Manor Swindon, all of England, assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jul. 28, 1980, Ser. No. 172,888
Int. Cl.³ B29C 27/00, 17/04
U.S. Cl. 428—36 9 Claims



1. A process for the production of a hollow heat-recoverable article, the steps comprising:
deforming a substantially non-cross-linked polymeric material at a temperature below the crystalline melting point or softening point of the material to render the material heat-recoverable primarily in one direction;
fusing together parts of the material to one other substantially non-cross-linked polymeric component to produce a hollow heat-recoverable article having a radial axis and a longitudinal axis, said article being heat-recoverable substantially only in a radial sense; and,
cross-linking the fused portions of the polymetic material.

4,342,801

SUEDE-LIKE SHEET MATERIAL

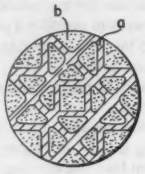
Klaus Gerlach, Aschaffenburg; Nikolaus Mathes, Breuberg; Hans-Jurgen Pitowski, Miltenberg, and Friedbert Wechs, Worth am Main, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Dec. 16, 1980, Ser. No. 217,067

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951307

Int. Cl.³ D02G 3/00

U.S. Cl. 428—91 16 Claims



1. A suede-like textile sheet structure impregnated with a microporous polyurethane, said textile sheet structure comprising a needle-punched web of fully or partly split staple fiber from crimped multicomponent filaments of the matrix/-segment type with polyester and polyamide as components, the cross section of the filaments before splitting comprises a matrix and at least 6 peripheral segments not completely embedded in said matrix, which segments have a wedge-shaped or lenticular-shaped cross section, each filament having a denier before splitting of about 0.5 to 10 dtex, said matrix of individual segments having a denier from about 0.1 to about 1 dtex; said segments having a shrinkage differential of at least 10% compared to the matrix, said polyurethane is composed of polyglycols, diisocyanate and low MW glycols as chain extender, and at least in part surrounds the individual fibers after the fashion of tubes, whereby the lumen of the tubular section surrounding the fibers is larger than the volume of the embedded fiber section and less than 70% of the surface of said individual segment and matrix fibers is firmly bonded to said polyurethane impregnating substance.

4,342,802

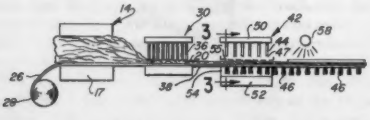
FLOOR COVERING OF NEEDLED WOVEN FABRIC AND NONWOVEN BATT

Robert C. Pickens, Jr., Gurnee; Patricia R. Kirchherr, Grayslake, and Reese R. Thomas, Libertyville, all of Ill., assignors to Ozite Corporation, Libertyville, Ill.

Filed Jan. 2, 1981, Ser. No. 222,171

Int. Cl.³ B32B 5/06

U.S. Cl. 428—92 11 Claims



1. A floor covering comprising:

a needled batt of non-woven staple fibers having a predetermined color,

a woven fabric having either the warps or the fillings comprised of continuous filaments, ribbon yarns, or spun fibers having a color contrasting with the color of the staple fibers, said woven fabric being needled to a face surface of said batt, and

rows of loops of staple fibers projecting from said batt and from said woven fabric,

some of said loops include portions of said continuous filaments, ribbon yarns or spun fibers with the color of the filaments interspersed with the color of the needled batt providing the floor covering with individual loops or clusters of loops of color contrasting with the color of the fibers of the non-woven batt.

4,342,803

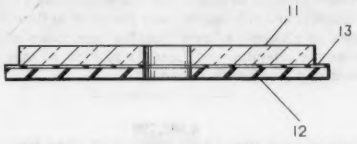
HEAT-RESISTANT VACUUM PAD AND METHOD OF MAKING SAME

Edward J. Stengle, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 14, 1980, Ser. No. 196,419

Int. Cl.³ B32B 17/04, 5/16

U.S. Cl. 428—131 7 Claims



1. A heat-resistant flexible laminated vacuum pad adapted to handling hot glass articles, and the like, comprising a tightly interwoven fabric substrate formed from thin glass fibers adapted to withstand temperatures up to about 1200° F., a silicone rubber backing, adhesive means securing said backing to one surface of said fabric substrate, and a continuous heat-cured coating of polysiloxane resin having a finely-divided filler of heat-resistant carbonaceous material therein extending over the other glass-contacting surface of said substrate to form a laminated pad, said laminated pad being flexible and adapted to hold a vacuum by flexure of said laminated pad prior to use thereof as a vacuum pad.

4,342,804

MICROPOROUS BITUMEN COATED UNDER-ROOFING MATERIAL

Jean-Yves Meynard, Mondoubleau, France, assignor to Siplast S.A., Paris, France

Filed Sep. 25, 1980, Ser. No. 190,600

Claims priority, application France, Oct. 18, 1979, 79 25891

Int. Cl.³ B32B 11/10, 11/12; E04D 1/20, 1/22, 5/12

U.S. Cl. 428—149 6 Claims

1. A water-tight and air- or air-vapor pervious under-roofing material for roofings made of discrete elements such as overlapping tiles, slates or the like, which comprises a sheet of agglomerated fibres, wherein said sheet is coated on its outer surface with a film of bitumen constituting an amount just sufficient for constituting when cooled a micro-perforated or micro-crackled structure preventing the passage of liquid by capillarity therethrough while permitting the passage of air or vapor.

4,342,805

SIMULATED LEATHER SHEET MATERIAL

John McCartney, Chester County, Pa., assignor to Norwood Industries, Inc., Malvern, Pa.

Filed Sep. 18, 1980, Ser. No. 188,330

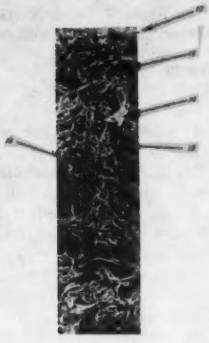
Int. Cl.³ B32B 5/06, 5/22

U.S. Cl. 428—151 11 Claims

1. A simulated leather sheet material comprising:

a polymer impregnated fibrous mass with a grain layer forming one surface, the grain layer having an actual density equal to its bulk density and a split layer forming the opposing surface, the grain layer being a composite of fibers in a continuous resin matrix, the split layer having a bulk density less than its actual density, the split layer

having coated and uncoated fibers, masses of polymer and voids, said sheet material having a density decreasing



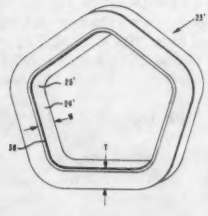
from the grain layer to the split layer, wherein the ratio of fiber to polymer is uniform throughout said sheet material.

4,342,806

COMPOSITE ELASTOMERIC SPRING BELT

Howard J. Kutsch, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 9, 1980, Ser. No. 157,512
Int. Cl.³ F16D *3/58*
U.S. Cl. 428—174 4 Claims



1. An article of manufacture comprising a composite belt that is suitable for use as an energy absorber in a torque converter, said belt having a fixed preformed endless path and at least three sides joined by curvilinear path changing sections, the belt comprises a plurality of strands, tapes or films of a copolyetherester elastomer that is oriented in the direction of their length and embedded within a matrix of a lower melting point copolyetherester elastomer that substantially surrounds the individual strands, tapes or films of the oriented copolyetherester elastomer forming a self-supporting structure that does not collapse upon itself when laid on one side of its outside perimeter, said belt when stretched from about 5–30% of the length of its perimeter returns to substantially its original size when force is removed.

4,342,807

LOW DENSITY MATTING AND PROCESS

Alfred Rasen; Rolf Vollbrecht; Klemens Schenesse, all of Obernburg/Main, and Joachim Behnke, Miltenberg, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 703,277, Jul. 7, 1976, Pat. No. 4,252,590.
This application Feb. 4, 1980, Ser. No. 117,980
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1975, 2530499
Int. Cl.³ B32B *3/28;* B32B *27/02*
U.S. Cl. 428—180 10 Claims

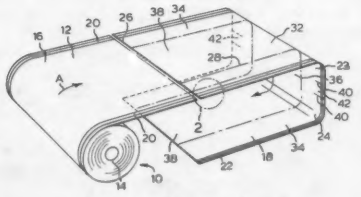
1. A low density matting article consisting essentially of a plurality of continuous melt-spun synthetic polymer filaments of a diameter of about 0.1 to 0.5 mm. laid in overlapping rows of irregularly looped and intermingled filaments to form, in the aggregate, a peak and valley three-dimensional structure undulating in the longitudinal and/or transverse directions of the matting, the individual filaments in said matting being self-bonded at random points of intersection and having a number of transversely directed loops sufficient to provide a transverse strength per unit of surface weight of at least 2 Nm/g.

4,342,808

ROLL STOCK FOR USE IN MANUFACTURE OF BAG

Marinus J. M. Langen, Rexdale, and Edgar H. Strauss, Toronto, both of Canada, assignors to H. J. Langen & Sons Limited, Mississauga, Canada

Continuation of Ser. No. 969,409, Dec. 14, 1978, abandoned.
This application Feb. 25, 1980, Ser. No. 124,338
Int. Cl.³ B32B *3/02, 29/00*
U.S. Cl. 428—194 2 Claims



1. A paper bag forming roll stock comprising a longitudinally elongated web of bag forming paper having an inner face and an outer face, a pair of oppositely disposed side edges and a marginal edge portion extending inwardly from each of said side edges, said web having a uniform thickness across its full width, said web being wound onto a roll with said inner and outer faces aligned in face-to-face contact with one another, a first pair and a second pair of bands of cohesive-adhesive material, one of said pairs of adhesive bands being applied to and extending continuously in a straight path longitudinally of the web along said inner face and the other pair being applied to and extending continuously in a straight path longitudinally along the outer face of the web, each of the adhesive bands of the first pair being located within a different one of the marginal edge portions on the one face of the paper and spaced inwardly from the adjacent side edge, and each of the bands of said second pair being located within a different marginal edge portion on the other face of the paper and spaced inwardly from the adjacent side edge by a distance which is greater than the spacing of the inner edge of the underlying first band

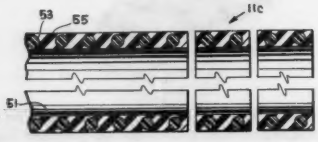
whereby the bands of the pairs are laterally offset so as to be out of alignment with one another in successive turns of said roll such that the successive turns are not adhesively secured to one another.

4,342,809

HIGH-FRICTION, LOW-ELASTICITY DRIVE BELT FOR TAPE CARTRIDGES

Chester W. Newell, San Jose, Calif., assignor to Newell Research Corporation, Saratoga, Calif.

Filed Jun. 24, 1980, Ser. No. 162,633
Int. Cl.³ B32B 7/02
U.S. Cl. 428—215 9 Claims



1. An inelastic compound endless belt for driving tape rolls about their peripheries at high accelerations comprising,

an endless base belt having a coefficient of elasticity at least as low as the tape being driven, and

an elastomeric coating at least on a side of the base belt facing the tape being driven, said coating having a relatively high coefficient of friction contacting the surface of the tape being driven,

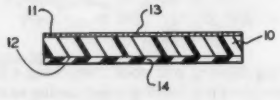
the base belt and the elastomeric coating forming a compound belt, said base belt and compound belt having uniform cross-sectional width and thickness, the width being less than the width of the tape being driven and the thickness being less than 5 mils.

4,342,810

PLASTIC CORE COMPOSITE HAVING IMPROVED IMPACT RESISTANCE

James L. Adcock, Union City, Ind., assignor to Sheller-Globe Corporation, Toledo, Ohio

Filed Mar. 23, 1981, Ser. No. 246,421
Int. Cl.³ B32B 7/02, 15/08, 25/08, 25/18
U.S. Cl. 428—215 14 Claims



8. An improved utility exterior attachment for a vehicle or the like, said attachment comprising an energy-absorbing composite comprising a plastic body of extended surface having a metallic layer along at least one surface thereof, and a butyl rubber layer adhered along an opposite surface thereof, said butyl rubber layer having a surface tack aiding its adherence to said opposite surface, being non-flowable and dimensionally stable, and being sufficiently elastomeric at low temperatures and of sufficient extent and thickness that said attachment has a reduced susceptability to damage by blows to the metailic layer at minus 30° F.

12. The utility exterior attachment of claim 8 in which said body has an average thickness of about 0.10 to about 1.0 inch, said metallic layer has an average thickness of about 1.50 to about 5.00 mils, and said butyl rubber layer has an average thickness of about 0.100 to about 0.500 inch.

4,342,811

OPEN-CELLED MICROPOROUS SORBENT-LOADED TEXTILE FIBERS AND FILMS AND METHODS OF FABRICATING SAME

George Lopatin, Newton; Myron J. Coplan, Natick, and James P. Walton, Jr., Newton, all of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,178
Int. Cl.³ B01D 39/04, 39/16; B29D 27/00
U.S. Cl. 428—220 22 Claims

1. An open cell microporous body produced by mixing sorbent particles in a uniform liquefied blend comprising polymeric material and a diluent material, the blend being heated to a first temperature above the fusion temperature of the polymeric material, extruding the mixture to form the body, attenuating the body by draw-down from the melt, cooling the body to a second temperature sufficiently below the first temperature to cause the diluent material to undergo separation from the polymeric material into a fine distinct phase, and extracting the diluent material from said body to create an open-cell polymeric matrix, the sorbent particles being dispersed throughout the maxtrix in a state of high sorbent activity and in an amount between 10 and 50 percent by weight of the body after said extraction.

17. A method of forming a sorbent body including the steps of

mixing sorbent particles, a polymeric material and a diluent material and heating the mixture to a first temperature above the fusion temperature of the polymeric material, thereby forming a melt blend, the diluent material being chosen to be a liquid compatible and mixing uniformly with the polymeric material at said first temperature,

extruding the melt blend to form said body,

cooling the body to a second temperature sufficiently below said first temperature to cause the diluent material to undergo separation from the polymeric material into a fine distinct phase, and

extracting the diluent material from said body to create an open-cell polymeric matrix with said particles dispersed throughout said matrix in a highly active sorbent state.

4,342,812

STENTERED, BONDED, HEAT-SET, NON-WOVEN FABRIC AND PROCESS FOR PRODUCING SAME

Alan Selwood, Heighington, nr. Darlington, England, assignor to Imperial Chemical Industries Limited, England

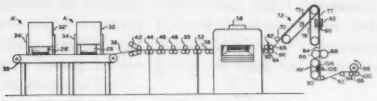
Filed Dec. 4, 1980, Ser. No. 213,119
Claims priority, application United Kingdom, Dec. 7, 1979, 7942317
Int. Cl.³ B32B 31/08, 31/12, 31/16, 31/26
U.S. Cl. 428—286 8 Claims

1. A process for producing a non-woven fabric comprising (1) forming a stack of three or more superimposed fibrous shims, in at least one of the shims the fibres being oriented predominantly in a first direction, corresponding to the machine direction of the shim and in at least one of the other shims the fibres being oriented predominantly in a second direction, corresponding to the machine direction of the shim, which is inclined at an acute angle to an imaginary line which is orthogonal to the first direction, and in at least one of the other shims the fibres being oriented in a third direction, corresponding to the machine direction of the shim, which is inclined at an obtuse angle to an imaginary line which is orthogonal to the first direction, (2) bonding the fibrous shims together, (3) subjecting the bonded fabric so formed to a stentering operation in a direction orthogonal to the first direction which causes the bonded shims to expand orthogonally to the first direction and to contract in the first direction, and (4) heat setting the bonded shims while they are being stentered.

4,342,813
METHOD FOR THE PRODUCTION OF A FUSED NONWOVEN FABRIC

Wayne K. Erickson, Seneca, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 14, 1978, Ser. No. 886,484
Int. Cl.³ D04H *1/04*
U.S. Cl. 428—296 **14 Claims**



1. A method for the manufacture of a fused nonwoven fabric from an unfused needle-punched nonwoven fabric of thermoplastic staple fibers, the unfused fabric having a first surface and a second surface opposite said first surface, comprising the steps of:

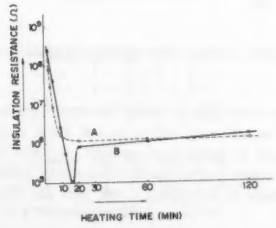
first exposing at least one of said first and second surfaces of the unfused fabric to infrared radiation to the extent that a substantial portion of the fibers forming said at least one surface and between said first surface and said second surface are fused together and the fibers forming the second surface remain substantially unfused; and

subsequently contacting the thus-treated at least one surface of the nonwoven fabric with at least one heated roll having a temperature sufficient to fuse together at least a portion of the fibers forming the surface in contact with the heated roll.

4,342,814
HEAT-RESISTANT ELECTRICALLY INSULATED WIRES AND A METHOD FOR PREPARING THE SAME

Takayoshi Usuki; Yukio Endo, both of Tokyo; Kichizo Ito, Chiba; Takao Tuboi, Ichikawa, and Shin Kubota, Urayasu, all of Japan, assignors to The Fujikura Cable Works, Ltd., Tokyo, Japan

Filed Dec. 5, 1979, Ser. No. 100,403
Claims priority, application Japan, Dec. 12, 1978, 53-90441; Dec. 12, 1978, 53-152647; Sep. 7, 1979, 54-114222; Sep. 8, 1979, 54-114740; Oct. 27, 1979, 54-138946
Int. Cl.³ B32B *27/00*; H01B *7/00*
U.S. Cl. 428—383 **6 Claims**



1. A heat-resistant electrically insulated wire comprising a conductor,

at least one composite coating layer circumferentially enclosing the conductor, said composite coating layer being a mixture comprising an inorganic fine powder selected from the group consisting of Al_2O_3, $BaTiO_3$, $CaTiO_3$, $PbTiO_3$, $ZrSiO_4$, $BaZrO_3$, $MgSiO_3$, SiO_2, BeO, ZrO_2, MgO, clay, kaolin, bentonite, montmorrilonite, glass frit, mica, BN and silicon nitride, and mixtures thereof and an inorganic polymer selected from the group consisting of silicone resins; modified silicone resins; inorganic polymers having a skeleton comprising silicone, oxygen and one or more elements selected from the group consisting of C, Ti, B, Al, N, P, Ge, As and Sb and mixtures thereof, and

at least one overcoat layer of a flexible organic resin circumferentially enclosing said composite coating layer in a sleeve-like non-adhered relationship, said organic resin being selected from the group consisting of a polyimide, a polyamide-imide, a polyester-imide, a polyhydantoin, a polyester, a polyparabanic acid, an aromatic polyamide, an aliphatic polyamide, a polyurethane, a fluoroplastic, a polyolefin, a polyvinyl formal, a polysulfone, an epoxide resin, a phenoxy resin, and mixtures thereof,

wherein said composite coating layer has not artificially been fired and is adapted to be converted into a ceramic layer when exposed at elevated temperatures during use.

4,342,815
PRESSURE-SENSITIVE ADHESIVE TAPE HAVING A RELEASE COATING

Donald F. Doehnert, Millington, N.J., assignor to Permacel, New Brunswick, N.J.

Division of Ser. No. 127,702, Mar. 6, 1980, Pat. No. 4,299,741. This application Feb. 4, 1981, Ser. No. 232,779
Int. Cl.³ B32B *27/30*
U.S. Cl. 428—522 **1 Claim**

1. A pressure-sensitive tape having a hydrophobic film as backing and having a release coating on the non-adhesive side of the backing, said coating formed by

(A) applying an aqueous release composition comprising

(1) a release polymer formed by a polymerizing in parts of weight of

(a) from about 40 to about 80 parts of a higher alkyl acrylate ester represented by the formula

$$CH_2{=}\underset{\underset{R'}{|}}{C}{-}\overset{\overset{O}{\|}}{C}{-}OR''$$

wherein R′ is hydrogen or methyl and R″ is a straight chain hydrocarbon radical of from about 12 to 24 carbon atoms,

(b) from about 5 to about 30 parts of a carboxyl supplying monomer selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, maleic anhydride, half esters of maleic acid, itaconic acid and fumaric acid,

(c) from about 10 to about 45 parts of an acrylate derived hardening monomer selected from the group consisting of acrylonitrile, methacrylonitrile, methyl acrylate, ethyl acrylate, methyl methacrylate and ethyl methacrylate;

(2) a base;

(3) a polar solvent wetting agent, said solvent being employed in an amount less than about 25 percent of the volatile portion of the ultimate composition; and

(4) a water soluble thickening agent said thickening agent being present in such amounts that the viscosity of the release composition does not exceed about 200 centipoises; and

(B) drying.

4,342,816
FUEL CELL STACK ARRANGEMENTS

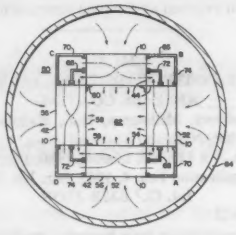
Richard E. Kothmann, Churchill Boro, and Edward V. Somers, Murrysville, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 22, 1981, Ser. No. 256,419
Int. Cl.³ H01M *8/00*
U.S. Cl. 429—13 **7 Claims**

1. An arrangement of fuel cell stacks, each said stack shaped in cross-section as a polygon having pairs of oppositely-dis-

posed peripheral faces and including means for flowing a fuel therethrough from fuel inlets on a peripheral face to fuel outlets on an oppositely disposed peripheral face, means for flowing an oxidant therethrough from oxidant inlets on a peripheral face to oxidant outlets on an oppositely-disposed peripheral face, and means for flowing a coolant therethrough from coolant inlets on a peripheral face which is a different peripheral face than said fuel and oxidant peripheral faces to coolant outlets on a peripheral face which is a different peripheral face than said fuel and oxidant peripheral faces;

an even number, and at least four of said stacks being arranged in a loop such that said coolant inlet peripheral



faces face outwardly of said loop and said coolant outlet peripheral faces face inwardly of said loop;

means for sealing among consecutive stacks of said loop such that the interior of said loop forms an enclosure duct;

means disposed at alternate junctures of said stacks for inletting fuel and outletting oxidant from two consecutive stacks of said loop;

means disposed at other alternate junctures of said stacks for inletting oxidant and outletting fuel from two consecutive stacks; and

means for flowing a coolant to said coolant inlets, through said stacks, and into said enclosure duct.

4,342,817

MASK FOR STRUCTURING SURFACE AREAS, AND METHOD OF MAKING IT

Harald Bohlen, Boeblingen; Helmut Engelke, Altdorf; Johann Greschner, Pliezhausen, and Peter Nehmiz, Stuttgart-Rohr, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,602

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922416

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—5 **13 Claims**

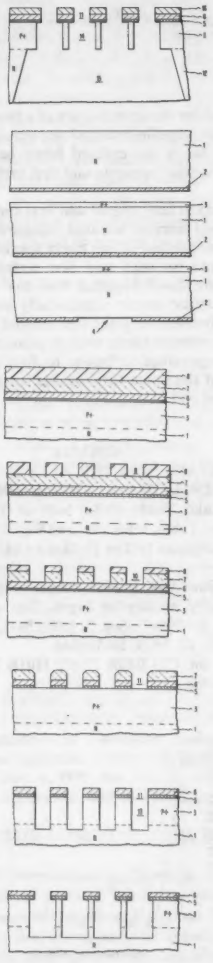
1. A mask for forming patterns with improved edge definition by avoiding scattering effects at the mask pattern edges, said mask comprising:

at least one metal layer with throughgoing apertures defining the mask pattern,

a semiconductor substrate having front and back surfaces, the front surface carrying the metal layer and having throughholes that correspond to the mask pattern, the throughholes extending from the metal layer-covered front surface through the substrate to at least one tub-shaped recess which extends from the back surface into the semiconductor substrate,

a surface layer provided in said semiconductor substrate, said layer differing in its doping from the rest of said substrate, and

said throughholes, at least as far as they extend through the surface layer of said substrate, having substantially vertical sidewalls with respect to the metal layer covered surface, said sidewalls being set back relative to said apertures in said metal layer to provide said throughholes with lateral dimensions larger than said apertures in said metal layer so that said metal layer protrudes over said surface layer



whereby a mask pattern is achieved whose effective thickness toward a scattering effect exposure is decreased to the thickness of said metal layer while still being supported by a precisely controllable semiconductor stabilization structure.

4,342,818

PROCESS FOR FORMING COLOR FILTER

Yukio Yokota, Minami-ashigara; Masamichi Sato, and Kenji Matsumoto, both of Asaki, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 22, 1980, Ser. No. 218,972
Claims priority, application Japan, Dec. 25, 1979, 54/168564
Int. Cl.³ G03C 7/00
U.S. Cl. 430—7 6 Claims

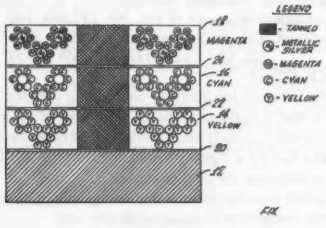
1. A process for forming a color filter, which comprises
(i) patternwise exposing a black-and-white silver halide emulsion layer of a photographic material comprising a support having thereon at least one black-and-white silver halide emulsion layer,
(ii) developing the photographic material with a developing solution containing a first color dye developer to form a first pattern containing a first color dye and silver grains,
(iii) bleaching away or re-halogenating the silver grains in said first pattern produced in (ii),
(iv) again patternwise exposing the photographic material and then developing the photographic material in a developing solution containing a second color dye developer different from said first color dye developer to form another pattern containing a second color dye, and
(v) removing remaining silver and/or silver halide after formation of the pattern produced in (iv).

4,342,819

HIGH RESOLUTION DEVELOPED COLOR FILM

Richard J. Goldberg, 4814 Brandenburg Pl., Tarzana, Calif. 91336

Continuation-in-part of Ser. No. 815,947, Jul. 15, 1977, Pat. No. 4,183,750. This application Jun. 9, 1978, Ser. No. 914,165
Int. Cl.³ G03C 5/04
U.S. Cl. 430—8 15 Claims



1. A high resolution developed color camera film comprising:
a base;
a plurality of superimposed layers on said base, each layer comprising a color image of the same image sense but differently colored, further comprising a silver image corresponding to the color image in the outermost layer, and wherein the film has a resolution in excess of 125 lines/mm at a contrast of 1.6:1.

4,342,820

DRY PLANOGRAPHIC PRINTING PLATE AND PREPARATION THEREOF

Takao Kinashi, Otsu; Takashi Fujita, Kusatsu, and Norio Kawabe, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 215,100
Int. Cl.³ G03C 1/68
U.S. Cl. 430—11 9 Claims

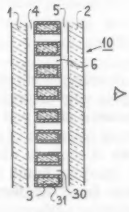
1. A negative working presensitized printing plate for use in dry planography, which comprises
(1) a base substrate,
(2) an oleophilic photosensitive layer secured to and overlying said base substrate, and
(3) an ink repelling silicone rubber layer secured to and overlying said photosensitive layer,
said photosensitive layer further comprising a component selected from the group consisting of a quinonediazide cross-linked with a polyfunctional compound, a quinonediazide urethanized with a monoisocyanate, an esterified quinonediazide, an amidized quinonediazide a quinonediazide graft polymerized with a vinyl monomer, so that said photosensitive layer is substantially insoluble in a developer, capable of releasing said silicone rubber layer and constituting an image area in a selected area to be exposed to the actinic light, and so that said silicone rubber layer is capable of being removed in said exposed image area by said developer and constituting a non-image area in an area unexposed to the actinic light.

4,342,821

DIRECTIONAL FILTER FOR A DISPLAY SCREEN, THE METHOD FOR MANUFACTURING SAME AND A DISPLAY SYSTEM, A CATHODE-RAY TUBE IN PARTICULAR, PROVIDED WITH SUCH A FILTER

Jean P. Galves; Pierre Merloz, and Jean Sagnard, all of Paris, France, assignors to Thompson-CSF, Paris, France

Filed Jul. 18, 1980, Ser. No. 170,278
Claims priority, application France, Jul. 27, 1979, 79 19429
Int. Cl.³ G03C 5/00; G02B 27/00, 5/20
U.S. Cl. 430—12 6 Claims



1. A method of manufacturing a directional filter for display screen comprising, in succession, the following steps:
taking a plate of a photo-sensitive glass;
exposing said plate to ultraviolet light through a mask whose meshes are arranged in a given pattern;
etching the plate by action of a chemical agent whereby obtaining a network of channels passing through the plate at the location of said meshes;
depositing over the whole of the surface of the plate, including the inside of the channels, a thin metallic layer;
blackening the deposit thus obtained, to form a plate with network of open, light transmitting channels.

4,342,822

METHOD FOR IMAGE DEVELOPMENT USING ELECTRIC BIAS

Nagao Hosono, Chofu, and Junichiro Kanbe, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,674
Claims priority, application Japan, Mar. 7, 1979, 54-26454
Int. Cl.³ G03G 13/09
U.S. Cl. 430—97 9 Claims

1. A developing method comprising:
(a) arranging a latent image holding member and a developer carrying member at spaced mutually opposed positions, and providing a space gap therebetween at a developing section, wherein said gap is maintained greater than a thickness of a developer layer applied on the surface of said developer carrying member;

(b) applying an alternating electric field across the space gap; and

(c) using a developer prepared by mixing electrically insulative toner particles having an average particle diameter of from 5 microns to 30 microns with very fine powder particles having a smaller particle diameter than said toner particles and capable of assisting electric charging of said toner particles in a polarity opposite to that of a latent image, and wherein the toner particles of up to 4 microns in particle diameter contained in the developer occupy at most 10% in the particle number distribution.

4,342,823

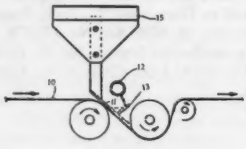
PERFORATE DEVELOPMENT ELECTRODE

Clyde P. Grant, Gorham; Merton A. Look, Westbrook, and Richard M. Lowe, South Portland, all of Me., assignors to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 570,865, Apr. 23, 1975, abandoned, which is a division of Ser. No. 338,905, Mar. 7, 1973, Pat. No. 3,916,827. This application Aug. 14, 1979, Ser. No. 66,395

Int. Cl.³ B05D *1/06*

U.S. Cl. 430—103 1 Claim



1. A method for developing electrostatic images on a sheet of electrophotographic copy material comprising the steps of moving the copy material sheet past and separated from a flat perforate development electrode of the type used to eliminate edge effect in a path of uniform distance from the electrode and simultaneously spraying liquid toner against pressure reducing means separate from and disposed adjacent to the electrode to reduce and make uniform the pressure of the flowing liquid toner and flowing the liquid toner uniformly over and through the perforate development electrode and over the image side of the sheet without contacting the side opposite the image side with said toner.

4,342,824

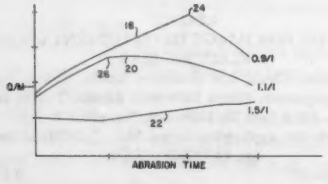
DEVELOPER WITH COATED CARRIER MATERIAL AND METHOD OF MAKING

Douglas R. Campbell, Derry, Pa., assignor to Imaging Systems Corporation, Derry, Pa.

Filed May 27, 1980, Ser. No. 153,722

Int. Cl.³ B05D *1/06*

U.S. Cl. 430—108 22 Claims



1. The method of coating a flowable carrier for use in electrophotographic recordings which comprise the steps of:

a. reacting from 1.4 to 1.55 parts of a polyfunctional polyisocyanate with one part of a hydroxy containing polymer in the presence of a catalyst to form a coating solution;

b. selecting the hydroxy containing polymer from the group of hydroxylated polyesters, hydroxylated acrylics, hydroxylated styrene acrylics, styrenated allyl alcohol, epoxie, polylacteons or polydimethylsilxane.

4,342,825

PHOTOGRAPHIC ELEMENTS CONTAINING CYAN-FORMING COLOR COUPLERS

Raphaël K. Van Poucke, Berchem; Marcel J. Monbaliu, and Jan J. Vandewalle, both of Mortsel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Mar. 25, 1981, Ser. No. 247,404

Claims priority, application United Kingdom, Apr. 9, 1980, 8011693

Int. Cl.³ G03C *1/76, 1/40*

U.S. Cl. 430—505 5 Claims

1. Photographic element comprising (a) light-sensitive silver halide emulsion layer(s) and at least one phenol-type colour coupler capable of forming a cyan indoaniline dye by reaction with an oxidized aromatic primary amino developing agent and carrying a fluorine-containing substituent, wherein said colour coupler comprises in the 2-position of the phenol a benzamido group carrying on its benzene nucleus at least one —Q—Rf group as fluorine-containing substituent, Q being oxygen, sulphur, or sulphonyl, and Rf representing a short-chain fluorine-containing group derived from hexafluoropropylene or trifluorochloroethylene, such short-chain group corresponding to one of the formulae: $—CF_2—CHFY$, $—CF=CFY$, or $—CF_2—CF=CF_2$, Y being chlorine or trifluoromethyl.

4,342,826

IMMUNOASSAY PRODUCTS AND METHODS

Francis X. Cole, Stow, Mass., assignor to Collaborative Research, Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 117,864, Feb. 4, 1980, abandoned. This application Jan. 12, 1981, Ser. No. 222,815

Int. Cl.³ C12W *11/04;* G01W *33/54*

U.S. Cl. 435—7 10 Claims

1. An immuno test method comprising forming a mixture of

(a) a stable liposome labeled with one of an antigen or its cognate antibody sequestering an enzyme carried within it and having a signal to noise ratio of no less than 5;

(b) a substrate for said enzyme

(c) a test material to be tested for specific activity of the said one antigen or cognate antibody; and

(d) complement,

and detecting the presence or absence of enzymatic activity in said mixture under conditions which permit an immune reaction to expose said enzyme to said substrate.

4,342,827

PRODUCTION OF ENZYMES

Anthony Atkinson, Salisbury; Christopher J. Bruton, Kew, both of England; Michael J. Comer, Weilheim, Fed. Rep. of Germany, and Richard J. Sharp, Salisury, England, assignors to Public Health Laboratory Service, Center for Applied Microbiology & Research, Salisbury, England

Filed May 22, 1979, Ser. No. 41,481

Claims priority, application United Kingdom, May 22, 1978, 21194/78

Int. Cl.³ C12Q *1/32;* C12N *15/00, 9/04, 1/20*

U.S. Cl. 435—26 27 Claims

1. A glycerol dehydrogenase enzyme preparation having an active half-life of greater than 4 days when stored at 20° C. as a 3 mg/ml solution in a pH 6.8 buffer solution consisting of 50 mM potassium phosphate, 10 mM β-mercaptoethanol and 0.1 mM phenylmethyl sulphonyl fluoride.

4,342,828

METHOD FOR PRODUCING SUBSTANCE CAPABLE OF STIMULATING DIFFERENTIATION AND PROLIFERATION OF HUMAN GRANULOPOIETIC STEM CELLS

Fumimaro Takaku, Utsunomiya; Katsuhiro Ogasa, Yokohama; Morio Kuboyama; Nobuya Yanai, both of Tokyo; Muneo Yamada, Kodaira, and Yoshiteru Watanabe, Tokyo, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo and The Green Cross Corp., Osaka, both of, Japan

Filed Jul. 15, 1980, Ser. No. 169,107

Claims priority, application Japan, Jul. 20, 1979, 54-92355; May 15, 1980, 55-64625

Int. Cl.[3] C12N *5/00;* C12P *19/26*

U.S. Cl. 435—41 10 Claims

1. A method for producing a substance capable of stimulating the proliferation and differentiation of human granulopoietic stem cells, which comprises cultivating monocytes and macrophages, which have been separated from the human peripheral blood, in a synthetic medium for tissue culture containing a glycoprotein separated from the human urine and capable of stimulating human or mouse bone marrow cells to form human granulocytes or mouse macrophages and granulocytes, thereby producing a substance capable of stimulating the proliferation and differentiation of human granulopoietic stem cells in the medium, and recovering the active substance from the medium.

4,342,829

PROCESS FOR PREPARING NARASIN

Ralph E. Kastner, Indianapolis, and Robert L. Hamil, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 6, 1981, Ser. No. 261,068

Int. Cl.[3] C12P *17/16;* C12N *1/20;* C12R *1/465*

U.S. Cl. 435—118 4 Claims

1. The method of producing the antibiotic narasin which comprises cultivating *Streptomyces granuloruber,* NRRL 12389, or a narasin-producing mutant or variant thereof, in a culture medium containing assimilable sources of carbohydrate, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antibiotic activity is produced by said organism in said culture medium.

4. A biologically pure culture of the microorganism *Streptomyces granuloruber,* NRRL 12389.

4,342,830

PROCESS FOR SEPARATING AND RECOVERING ORGANICS AND INORGANICS FROM WASTE MATERIAL

Clifford C. Holloway, 303 E. Brooks, Apt. 215 W, Norman, Okla. 73069, assignor to Clifford C. Holloway; Lewis B. Holloway and Winford B. Holloway, all of Birmingham, Ala., a part interest

Filed May 11, 1981, Ser. No. 262,316

Int. Cl.[3] C12P *7/06, 7/08;* A23K *1/10*

U.S. Cl. 435—161 10 Claims

1. The process of treating waste material for the separation and recovery of organic matter comprising fermentable vegetable material and inorganic matter wherein rigid organic matter becomes soft when subjected to heat and pressure, comprising carrying out the following steps in the sequence named:

(a) feeding said waste material into a container having perforations therein and mounted within a closed chamber in spaced relation to the inner surface of said closed chamber,

(b) agitating said waste material while in said container,

(c) subjecting said waste material in said container to heat under a pressure ranging from approximately 20 psi to 100 psi for a period ranging from approximately twenty minutes to two hours to sterilize said waste material and soften said organic matter contained therein, and

(d) releasing the pressure from said chamber suddenly to thus force the softened organic matter outwardly of said container through said perforations, so that said organic matter is separated from said inorganic matter in said container.

4,342,831

FERMENTABLE ACID HYDROLYZATES AND FERMENTATION PROCESS

Marcel D. Faber, Princeton; Richard H. Ernst, Kendall Park, and Philip H. Lefebvre, Spotswood, all of N.J., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 53,979, Jul. 2, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,351

Int. Cl.[3] C12P *7/06*

U.S. Cl. 435—163 27 Claims

1. A method for preconditioning acid hydrolyzates derived from lignocellulosic materials comprising glucose and substances which tend to inhibit the fermentation thereof, consisting essentially of the steps of:

(1) subjecting said acid hydrolyzate to steam to remove steam-volatile substances therefrom;

(2) adding sufficient calcium oxide to said steam-stripped hydrolyzate to adjust the pH to between 10 and about 10.5 and maintaining said mixture at said pH for about 1 to 3 hours;

(3) adding sufficient amounts of a mineral acid to adjust the pH of said hydrolyzate to about 5 to 7; and

(4) adjusting the concentration of said hydrolyzate to a glucose concentration of less than 150 grams per liter to provide a solution fermentable to ethyl alcohol, with the proviso that when said concentration is greater than 50 grams per liter, the mineral acid employed in step (3) is phosphoric acid.

4,342,832

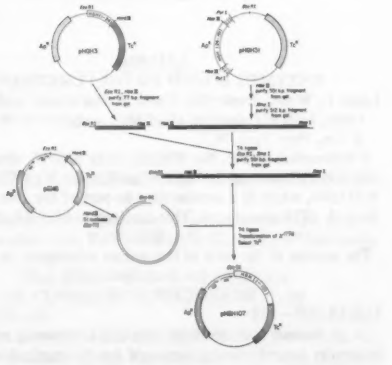
METHOD OF CONSTRUCTING A REPLICABLE CLONING VEHICLE HAVING QUASI-SYNTHETIC GENES

David V. Goeddel, and Herbert L. Heyneker, both of Burlingame, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Jul. 5, 1979, Ser. No. 55,126

Int. Cl.[3] C12N *15/00*

U.S. Cl. 435—172 12 Claims



1. In the method of constructing a replicable cloning vehicle capable, in a microbial organism, of expressing a particular polypeptide of known amino acid sequence wherein a gene coding for the polypeptide is inserted into a cloning vehicle

and placed under the control of an expression promoter, the improvement which comprises:

(a) obtaining by reverse transcription from messenger RNA a first gene fragment for an expression product other than said polypeptide, which fragment comprises at least a portion of the coding sequence for said polypeptide;

(b) where the first fragment comprises protein-encoding codons for amino acid sequences other than those contained in said polypeptide, eliminating the same while retaining at least a substantial portion of said coding sequence, the resulting fragment nevertheless coding for an expression product other than said polypeptide;

the product of step (a) or, where required, step (b) being a fragment encoding less than all of the amino acid sequence of said polypeptide;

(c) providing by organic synthesis one or more synthetic non-reverse transcript-gene fragments encoding the remainder of the amino acid sequence of said polypeptide, at least one of said fragments coding for the amino-terminal portion of the polypeptide; and

(d) deploying the synthetic gene fragment(s) of step (c) and that produced in step (a) or (b), as the case may be, in a replicable cloning vehicle in proper reading phase relative to one another and under the control of an expression promoter;

whereby a replicable cloning vehicle capable of expressing the amino acid sequence of said polypeptide is formed.

4,342,833

IMMOBILIZED RESTRICTION ENDONUCLEASES

Jack G. Chirikjian, Rockville, Md., assignor to Bethesda Research Laboratory, Rockville, Md.

Continuation-in-part of Ser. No. 801,854, May 31, 1977, abandoned. This application Apr. 17, 1978, Ser. No. 896,811

Int. Cl.³ C12N *11/10, 9/22;* C12P *19/34*

U.S. Cl. 435—178 **2 Claims**

1. A biochemically active, immobilized, restriction endonuclease comprising restriction endonuclease Bam HI chemically bonded to cyanogen bromide activated agarose.

2. A biochemically active, immobilized, restriction endonuclease comprising restriction endonuclease Eco RI chemically bonded to cyanogen bromide activated agarose.

4,342,834

ENZYMES BOUND TO POLYURETHANE

Louis L. Wood, Rockville; Frank J. Hartdegen, and Peter A. Hahn, both of Columbia, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 574,778, May 5, 1975, abandoned, which is a division of Ser. No. 362,488, May 21, 1973, Pat. No. 4,312,946, which is a continuation-in-part of Ser. No. 250,012, May 3, 1972, abandoned. This application May 11, 1976, Ser. No. 685,230

The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.

Int. Cl.³ C12N *11/08, 11/04*

U.S. Cl. 435—182 **3 Claims**

1. A foamed polyurethane product containing an enzyme internally bound thereto prepared by the method which includes contacting, prior to a subsequent foaming step, an isocyanate-capped polyurethane with an aqueous dispersion of an enzyme, under foam-forming conditions, whereby the polyurethane foams and the enzyme becomes integrally bound to the thus formed polyurethane foam.

4,342,835

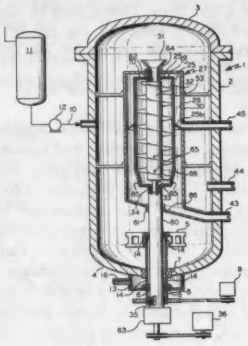
FERMENTATION PROCESS AND APPARATUS

Donald O. Hitzman, and Thomas R. Hopkins, both of Bartlesville, Okla., assignors to Provesta Corporation, Bartlesville, Okla.

Filed Oct. 3, 1980, Ser. No. 193,873

Int. Cl.³ C12N *1/16*

U.S. Cl. 435—255 **17 Claims**



1. A fermentation process comprising

(a) subjecting a mixture of a growth medium and a microorganism to a fermentation in a fermenter,

(b) generating a three phase mixture of gas, liquid and cells in said fermenter,

(c) carrying out a separation inside of said fermenter by passing the three phase mixture into a centrifuge cylinder,

(d) subjecting said three phase mixture in said centrifuge cylinder to a rapid spinning movement in contact with said centrifuge cylinder and thereby generating in at least a significant portion of the axial length of the centrifuge cylinder a first zone of material in contact with the centrifuge cylinder which material is rich in cells and depleted in liquid, a second zone being depleted of cellular material and rich in liquid,

(e) withdrawing a first fluid comprising said gas phase and a liquid depleted of cells as well as a separate second fluid being enriched in said cells and depleted of said liquid as two separate streams from said centrifuge cylinder, and

(f) recovering at least a portion of said first and/or second fluid from the fermenter as the product of the process.

5. An apparatus for carrying out a fermentation process comprising

(a) a closed fermenter housing,

(b) a centrifuge arranged within said closed fermenter housing and comprising

(aa) a centrifuge cylinder having an inner cylindrical surface arranged and designed for receiving a three phase mixture in a substantially tangential movement on said inner cylindrical surface,

(bb) a first fluid product conduit for receiving and conveying liquid product depleted of fermentation cells and gas from the centrifuge cylinder

(cc) a cell product conduit for receiving and conveying a second fluid rich in cell material from the centrifuge cylinder,

(dd) at least one of said product conduits providing a connection from said centrifuge through the confining wall of said closed fermenter housing to the outside thereof

(c) a feed inlet conduit operatively connected with said closed fermenter housing adapted for introduction of feed fluid into said closed fermenter housing and into the space within said closed fermenter housing surrounding said centrifuge,

(d) centrifuge inlet means to inject a three phase mixture from inside of said closed fermenter housing into said centrifuge

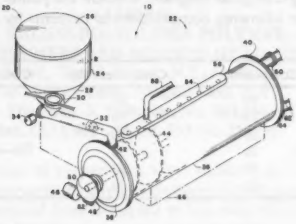
cylinder and with a substantial speed component tangentially with respect to said inner cylindrical surface.

4,342,836

CONTINUOUS ANAEROBIC DIGESTOR SYSTEM

Christian D. Harvey, Bolduc Apts., Sandown Rd., Fremont, N.H. 03044

Filed Oct. 17, 1980, Ser. No. 197,978
Int. Cl.³ C12M 1/02
U.S. Cl. 435—316 15 Claims



1. In a system for anaerobic digestion of organic material to produce methane gas, the improvement comprising in combination: means for continuously feeding said organic material into said system, means for continuously processing said organic material through the system; means for continuously receiving said gases from the system; means for continuously discharging effluent from the system, the means for continuously processing including horizontally disposed cylindrical tank-comprising means, screw means axially mounted therein, means defining an entrance port at a first end portion of the cylindrical tank-comprising means; the means for continuously discharging effluent being means defining an exhaust port at a second end portion of the cylindrical tank-comprising means, the means for continuously processing further including means for continuously rotating the screw means in a direction for urging said organic matter from the entrance port to the exhaust port, the means for continuously rotating comprising motor means having attachment to the screw means, said screw means mounting including a plurality of bearings having respective supports to said cylindrical tank-comprising means, means for supplying a fluid to said organic material to facilitate said anaerobic digestion; and means for protecting said plurality of bearings from damage by intrusion therein of said organic material continuously processed, including means for injecting a fluid from outside the cylindrical tank-comprising means into the plurality of bearings and for expelling said fluid from the plurality of bearings within the cylindrical tank-comprising means, said fluid supplied being said fluid expelled from the plurality of bearings within the cylindrical tank-comprising means.

4,342,837

SINTERABLE SILICON CARBIDE POWDERS AND SINTERED BODY PRODUCED THEREFROM

Hiroshige Suzuki, No. 39-9, 2-Chome, Kitasenzoku, Ohta-Ku, Tokyo, Japan, and Teizo Hase, Tokyo, Japan, assignors to Hiroshige Suzuki, Tokyo, Japan

Continuation of Ser. No. 149,693, May 14, 1980, abandoned, which is a continuation of Ser. No. 17,200, Mar. 5, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 233,691
Claims priority, application Japan, Mar. 15, 1978, 53-28599
Int. Cl.³ C04B 35/56
U.S. Cl. 501—90 2 Claims

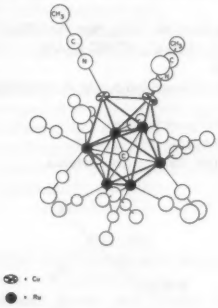
1. Sinterable silicon carbide powders having submicron grain size produced by reacting 1.8 to 2.0 parts by weight of silicon monoxide with to 1.0 part by weight of finely divided carbon at a temperature of 1,340° to 1,440° C. under an essentially inert atmosphere at a reduced pressure of less than 10 mmHg, the partial pressure of oxygen in said atmosphere being less than 10^{-10} atmospheres, said powders when mixed with 1% by weight each of boron and carbon and then heated at 2,100° C. for 60 minutes forming a sintered body having a density of 96% of theoretical density, a fine particle structure of less than 10 μm, a bending strength of 82.0 kg/mm² in the three point bending test at 1700° C. at 10^{-6} mmHg and containing more than 90%-β-type silicon carbide.

4,342,838

BIMETALLIC CLUSTERS OF RUTHENIUM WITH COPPER, SILVER AND GOLD

Roy L. Pruett, New Providence, and John S. Bradley, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 135,998, Mar. 31, 1980, Pat. No. 4,301,086. This application Mar. 11, 1981, Ser. No. 242,638
Int. Cl.³ C07C 27/06, 45/50
U.S. Cl. 518—713 8 Claims



1. A homogeneous process for the catalytic preparation of methanol which comprises contacting CO and H_2 in a CO:H_2 ratio of from 0.1 to 2 at a pressure of from 40 to 150 MPa in the presence of a catalytically effective amount of a bimetallic cluster compound of the formula $L_2M_2Ru_6C(CO)_{16}$ where L is RCN, R being C_1 to C_6 alkyl, C_6 to C_{10} aralkyl or phenyl and M is copper, silver or gold in an inert organic solvent at temperatures of from 225° to 325° C.

4,342,839

METHOD OF MANUFACTURE OF ION EXCHANGE RESINS

Hiroshi Akiyama, Ichikawa, and Koji Oinuma, Tokyo, both of Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 19, 1980, Ser. No. 132,474
Int. Cl.³ B01J 39/20, 41/18, 39/24, 41/14
U.S. Cl. 521—25 10 Claims

1. An ion exchange resin derived from vinyl monomers and having a functional group therein, said resin being disposed within the matrix of a granular activated carbon particle by polymerization of the vinyl monomers within the matrix of the particle, wherein the ion exchange resin, exclusive of said functional group, comprises up to 30% by weight of said activated carbon particle.

4,342,840

PROCESS FOR PRODUCING POLYMER POLYOL

Shigeyuki Kozawa, Yokohama; Takao Doi, Kawasaki, and Nobuaki Kunii, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 214,283

Claims priority, application Japan, Dec. 25, 1979, 54-167665; Dec. 28, 1979, 54-170325

Int. Cl.³ C08G *18/14, 18/63;* C07C *125/06*

U.S. Cl. 521—137 25 Claims

1. A process for producing a polymer polyol which comprises polymerizing a monomer having a polymerizable unsaturated group in a nitrogen bond-containing unsaturated polyol or polyol mixture and said nitrogen bond-containing unsaturated polyol having at least two nitrogen-containing bonds formed by reacting organic isocyanate groups with active hydrogen groups, at least one polymerizable unsaturated group and at least 1.7 hydroxyl groups, as average.

4,342,841

POLYAMIDE POLYURETHANE PREPARED BY REACTION OF POLYISOCYANATE WITH A 1,1-DIAMINO ETHYLENE

Louis M. Alberino, Cheshire, and Dale F. Regelman, Wallingford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 14, 1981, Ser. No. 292,871

Int. Cl.³ C08G *18/14*

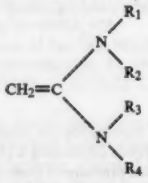
U.S. Cl. 521—163 18 Claims

1. A polyamide polyurethane which comprises the product of reaction of

A. an organic polyisocyanate;

B. at least one organic polyol; and

C. a ketene-aminal having the formula



wherein R_1, R_2, R_3, and R_4, when taken separately, are independently selected from the group consisting of lower alkyl, aralkyl, and cycloalkyl and, when taken together as R_1 with R_2 and R_3 with R_4 with the respective nitrogen atoms to which they are attached, represent independently a heterocyclic group having from 5 to 7 ring atoms

wherein the equivalent proportions of said polyol component (B) to said ketene-aminal component (C) fall within the range of about 1:4 to about 1:80 and the ratio of equivalents of said isocyanate to total equivalents of isocyanate reactive ingredients (B) plus (C) is within the range of about 0.95:1 to 6:1.

4,342,842

PROCESS FOR PRODUCING RIGID POLYURETHANE FOAM

Yasuo Hira, Fujisawa; Susumu Tsuzuku, Tokyo; Masao Gotoh, Yokosuka; Hitoshi Yokono, Yokohama; Hiroshi Kaneko, Yokohama, and Yoshihisa Hosoe, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 280,210

Claims priority, application Japan, Jul. 7, 1980, 55/91758

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—167 14 Claims

1. In a process for producing a polyurethane foam by a one-shot process using a composition comprising a polyol, a polyisocyanate, a blowing agent and a reaction accelerator as essential components, the improvement which comprises using as the polyol the following mixture comprising

(a) an alkylene oxide adduct of 4,4'-diaminodiphenylmethane having a hydroxyl value of 280–600 mg KOH/g,

(b) an aliphatic polyol having a hydroxyl value of 450–800 mg KOH/g and 3 or 4 hydroxyl groups in the molecule, and

(c) a polyol having a hydroxyl value of 30 to 100 mg KOH/g and 2 or 3 hydroxyl groups in the molecule,

the proportions of the components (a), (b) and (c) being in the closed area of A-B-C-D-E-F-A in the accompanying triangular diagram, wherein the points A to F have the following compositions in percents by weight:

	Component (a)	Component (b)	Component (c)
A	60	35	5
B	25	70	5
C	20	70	10
D	20	50	30
E	40	30	30
F	60	30	10

4,342,843

NEOPRENE LATEX CONTACT ADHESIVES

Witold Perlinski, Middlesex; Irwin J. Davis, Bridgewater, and John F. Romanick, Denville, all of N.J., assignors to National Starch and Chemical Corp., Bridgewater, N.J.

Continuation-in-part of Ser. No. 16,711, Mar. 1, 1979, abandoned. This application Feb. 24, 1981, Ser. No. 237,791

Int. Cl.³ C08L *63/00, 9/10*

U.S. Cl. 523—409 9 Claims

1. An improved multi-part aqueous contact adhesive composition containing not more than a minor amount of organic solvent consisting essentially of an unreacted blend of:

(a) a neoprene latex,

(b) a polyamine,

(c) an epoxy resin, and

(d) a tackifier selected from the group consisting of natural and modified rosins, polyterpene resins having a softening poing of from about 80° to 150° C., and aliphatic petroleum hydrocarbon resins having a Ball and Ring softening point of from about 70° to 135° C.;

wherein for every 100 parts by weight of dry neoprene, the epoxy resin is present in an amount of 10 to 40 parts, the polyamine in an amount sufficient to provide 50 to 150% of the stoichiometric amount required to cure the epoxy, and the tackifier in an amount of 20 to 50 parts.

4,342,844

PROCESS FOR PREPARING PEROXIDE MASTER BATCHES

Reinder Torenbeek, Twello; Jan D. van Drumpt, Deventer, and Gerrit F. Drost, Schalkhaar, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Dec. 4, 1980, Ser. No. 212,951

Claims priority, application Netherlands, Dec. 13, 1979, 7908964

Int. Cl.³ C08F *8/06*

U.S. Cl. 525—387 4 Claims

1. A process for the preparation of an organic peroxide master batch comprising from about 20 to about 60 percent by weight of an organic peroxide and from about 40 to about 80 percent by weight of a polymer capable of being cross-linked by the peroxide comprising (1) contacting particles of said polymer, having a diameter from about 200 microns to about 20 millimeters, at a temperature from about 15° C. to about 95° C., with a liquid medium which is not a physically stable emulsion and which comprises from about 2 to about 100 percent, by weight, of a peroxide which is a liquid at said temperature

and from about 0 to about 98 percent, by weight, of a suitable liquid in which the peroxide and the polymer are insoluble, for a period of time sufficient to incorporate from about 20 to about 60 percent of peroxide in the polymer particles, based on the total weight of the polymer particles containing the peroxide, said medium being present in such an amount that after the incorporation of the peroxide essentially all of the polymer particles are completely surrounded by the liquid medium (2) and subsequently separating the liquid medium from the polymer particles.

4,342,845

VINYL HALIDE-POLYOLEFIN POLYMER AND COPOLYMERS AND METHOD OF MAKING

William L. Schall, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Oct. 3, 1980, Ser. No. 193,560
Int. Cl.[3] C08F *255/02, 255/04, 255/06*
U.S. Cl. 525—53 31 Claims

1. A process of preparing a vinyl halide polymer which comprises polymerizing a reaction charge in bulk liquid phase, in the presence of from about 0.2 to less than about 50% by weight of the reaction charge of a straight or branched chain, or cyclic saturated hydrocarbon diluent inert to the polymerization mass containing from 3 to 15 carbon atoms, said charge comprised of vinyl halide monomer alone or in combination with up to 50% by weight based on the total weight of monomers of another ethylenically unsaturated monomer copolymerizable therewith, in the presence of from about 0.05% to about 20% by weight based on the vinyl halide monomer of a hydrocarbon olefin trunk polymer having a weight average molecular weight of about 50,000 to about 1,000,000, and a free radical initiator compound for said polymerization.

31. In the process of preparing a vinyl halide polymer which comprises polymerizing a reaction charge in bulk liquid phase, said charge comprised of vinyl halide monomer alone or in combination with up to 50% by weight based on the total weight of monomers of another ethylenically unsaturated monomer copolymerizable therewith, in the presence of from about 0.05% to about 20% by weight based on the vinyl halide monomer of a hydrocarbon olefin trunk polymer having a weight average molecular weight of about 50,000 to about 1,000,000, and a free radical initiator compound for said polymerization, which is characterized by passing through a thick paste state, the improvement of carrying out the polymerization in the presence of from about 0.2 to less than about 50% by weight of the reaction charge of a straight or branched chain, or cyclic saturated hydrocarbon diluent inert to the polymerization mass containing from 3 to 15 carbon atoms, and removing from about 2% to less than about 50% by weight of the vinyl halide portion of the charge during said thick paste state of the polymerization process to adjust the concentration of said olefin trunk polymer after said removal to greater than about 3.5% by weight based on the vinyl halide remaining in the charge, the initial concentration of said olefin trunk polymer in said polymerization reaction mass being more than about 1.8% by weight based on the vinyl halide charged.

4,342,846

BLENDS OF A POLYESTER RESIN AND IMPACT RESISTANT INTERPOLYMER

Joseph Silberberg, Brooklyn, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 9, 1981, Ser. No. 241,876
Int. Cl.[3] C08L *51/00*
U.S. Cl. 525—64 9 Claims

1. A blend comprising: (1) a polyester resin formed by reaction of a dicarboxylic acid and a diol; and (2) an impact resistant interpolymer comprising crosslinked (meth)acrylate, crosslinked styrene-acrylonitrile, and uncrosslinked styrene-acrylonitrile polymeric components.

4,342,847

PROCESS FOR THE PRODUCTION OF THERMOPLASTIC SYNTHETIC MATERIALS

Wilhelm Goyert, Cologne; Ernst Meisert; Wolfgang Grimm, both of Leverkusen; Alfred Eitel, Dormagen; Hans Wagner, Dormagen; Georg Niederdellmann, Dormagen, and Bernd Quiring, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 13, 1979, Ser. No. 103,001
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854409
Int. Cl.[3] D01F *1/02*
U.S. Cl. 525—66 9 Claims

1. A continuous process for the production of thermoplastic materials, comprising:

I. introducing 4 to 65 parts by weight of thermoplastic polymer into an extruder at a first inlet, wherein the temperature within said extruder is such that said thermoplastic polymer melts;

II. adding to said thermoplastic polymer through a second inlet 35 to 96 parts by weight of the following polyurethane forming components, such that the total parts by weight of thermoplastic polymer and polyurethane components is 100;

(A) organic polyisocyanate; and

(B) chain lengthening agent with a molecular weight below 400 containing a hydroxyl group and/or amine group;

wherein the ratio of isocyanate groups of component (A) to Zerewitinoff active groups of component (B) is in the range of about 0.90:1 to 1.2:1; and

III. discharging from the extruder the product of the process when the reaction of said polyurethane components (A) and (B) is substantially complete.

4,342,848

PROCESSING MODIFIER FOR HIGH-DENSITY POLYETHYLENE

Robert R. Blanchard, Brusly, and Tommy R. Bourne, Baton Rouge, both of La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 20, 1981, Ser. No. 284,419
Int. Cl.[3] C08L *23/06, 29/10*
U.S. Cl. 525—231 4 Claims

1. A process for extruding high-density polyethylene resins, comprising the steps of:

(a) heating above its melting point a mixture comprising about one hundred parts by weight of high-density polyethylene, and between about 0.03 and about 0.5 parts by weight of a polyvinyloctadecyl ether; and

(b) extruding the melt formed in step (a), thereby forming an extrudate.

4,342,849

NOVEL TELECHELIC POLYMERS AND PROCESSES FOR THE PREPARATION THEREOF

Joseph P. Kennedy, Akron, Ohio, assignor to The University of Akron, Akron, Ohio

Division of Ser. No. 73,789, Sep. 10, 1979, Pat. No. 4,316,973. This application Feb. 5, 1981, Ser. No. 231,899
Int. Cl.[3] C08F *8/06, 8/12, 8/18, 8/26*
U.S. Cl. 525—333.7 6 Claims

1. A novel telechelic polymer formed from an inifer and a cationically polymerizable olefin monomer having from about 4 to about 12 carbon atoms, said polymer having a residue of said inifer in the backbone thereof and carrying at least two hydroxyl groups;

said inifer selected from compounds having the following formula: AY_n, where A is selected from the group consisting of condensed and non-condensed aromatic compounds having from 1 to 4 rings, and linear and branched aliphatic

compounds having from 3 to 20 carbon atoms, where Y is represented by the following formula:

where R and R′ are selected from the group consisting of hydrogen, methyl, and phenyl, and R and R′ can be the same when A is an aromatic compound, or where R or R′ is phenyl when A is an aliphatic compound; and

where X is a halogen selected from the group consisting of fluorine, chlorine, and bromine, and where n is an integer from 2 to 6.

4,342,850

PROCESS FOR THE PREPARATION OF HYDROCARBON RESINS

Robert P. Allen, and Albert C. Ruggles, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,866

Int. Cl.³ C08F *8/04*

U.S. Cl. 525—339 **1 Claim**

1. A process for preparing a high softening point hydrocarbon resin which comprises heat treating the C_5 and higher hydrocarbon fraction mixture obtained in the steam cracking of propane and ethane by continuously passing said mixture through a stirred autoclave maintained at 175° to 250° C. under a pressure of 450–500 psig. for a period of 0.5 to 16 hours, fractionating said heat treated hydrocarbon fraction to remove the olefins and aromatics up through toluene, activating said fractionated heat treated fraction with alumina, polymerizing said activated fractionated heat treated fraction with a Friedel-Crafts catalyst, diluting said polymerized hydrocarbon fraction, washing said diluted polymerized hydrocarbon fraction with aqueous caustic, drying said washed fraction, and hydrogenating said dried fraction to provide a low color hydrocarbon resin.

4,342,851

CURABLE COMPOSITION OF HALOGEN-CONTAINING POLYMER

Akio Suzui, Amagasaki, and Yasuo Matoba, Toyonaka, both of Japan, assignors to Osaka Soda Co. Ltd., Osaka, Japan

Filed Feb. 27, 1981, Ser. No. 239,036

Claims priority, application Japan, Mar. 3, 1980, 55-26900; Aug. 6, 1980, 55-108631; Jan. 29, 1981, 56-12403

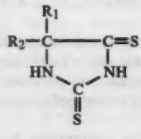
Int. Cl.³ C08G *65/24*; C08B *11/22*; C08F *8/34*

U.S. Cl. 525—403 **8 Claims**

1. A curable composition of halogen-containing polymer composed of

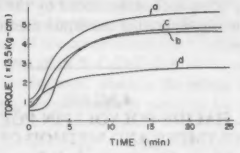
(1) 100 parts by weight of a halogen-containing polymer selected from the group consisting of polyepichlorohydrin, an epichlorohydrin/allyl glycidyl ether copolymer, an epichlorohydrin/ethylene oxide copolymer and an epichlorohydrin/ethylene oxide/allyl glycidyl ether terpolymer,

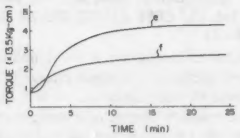
(2) as a crosslinking agent, about 0.1 to about 10 parts by weight of a 2,4-dithiohydantoin having the formula

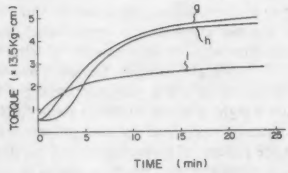


(I)

wherein R_1 and R_2 are identical or different and represent a member selected from the class consisting of a hydrogen atom, C_1–C_8 alkyl groups, C_6–C_8 cycloalkyl groups, C_2–C_8 alkenyl groups, C_6–C_8 aryl groups and C_7–C_8 aralkyl groups, or R_1 and R_2 are bonded together to form a 5- to 7-membered hydrocarbon ring which may contain a nitrogen atom and have at least one lower alkyl group as a substituent, provided R_1 and R_2 are not hydrogen atoms simultaneously







or a metal salt thereof, and

(3) as an acid acceptor, about 0.5 to about 50 parts by weight of a compound of a metal of Group II or IVa of the periodic table selected from the group consisting of Mg, Ba, Ca, Sn and Pb.

4,342,852

SETTING TYPE RESIN COMPOSITION CONTAINING A SUBSTANTIALLY LINEAR, HIGH-MOLECULAR-WEIGHT NOVOLAK SUBSTITUTED PHENOLIC RESIN

Nobuyuki Takeda, and Tadao Iwata, both of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

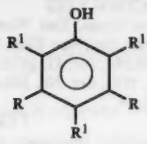
Filed Dec. 29, 1980, Ser. No. 221,354

Claims priority, application Japan, Dec. 27, 1979, 54-169140; Jun. 3, 1980, 55-73754; Jun. 3, 1980, 55-73755; Jun. 3, 1980, 55-73756; Jun. 3, 1980, 55-73757

Int. Cl.³ C08L *63/02*

U.S. Cl. 525—481 **15 Claims**

1. A resin composition comprising (A) a thermosetting resin and (B) 10 to 200 parts by weight, per 100 parts by weight of said resin (A), of a substantially linear, high-molecular-weight novolak substituted phenolic resin which comprises substantially linear novolak type recurring units formed by condensation of a phenol component containing at least 70 mole % of at least one bifunctional phenol represented by the following general formula (I):



(I)

wherein two of three R^1's are hydrogen atoms and the remaining one R^1 is an alkyl group having 1 to 8 carbon atoms, an aryl group having 6 to 10 carbon atoms, a halogen atom or a hydroxyl group, and two R's, which may be same or different, stand for a member selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 8 carbon atoms, a halogen atom and a hydroxyl group,

with at least one aldehyde component respresented by the following general formula (II):

$$R^2—CHO \qquad (II)$$

wherein R^2 stands for a hydrogen atom or a substituent selected from the group consisting of a methyl group and a halogenated methyl group,

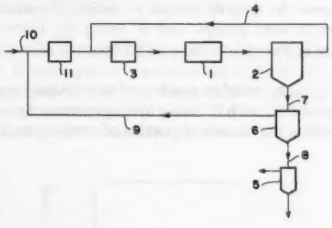
wherein said novolak substituted phenolic resin (B) may contain intervening groups consisting of a divalent hydrocarbon group, which appear alternately in blocks of said novolak type recurring units having a number average molecular weight of 250 to 1200, in an amount of 0.5 to 1 mole per mole of said blocks and wherein said novolak substituted phenolic resin has a number average molecular weight of at least 1500 as measured by the vapor pressure osmometry in N,N-dimethylacetamide as the solvent.

4,342,853

PROCESS FOR MANUFACTURING ETHYLENE POLYMERS

Pierre Durand, Neuilly sur Seine, and Pierre Gloriod, Saint Nicolas de la Taille, par Lillebonne, both of France, assignors to Societe Chimique des Charbonnages—CdF Chimie, Paris, France

Filed Jul. 2, 1980, Ser. No. 164,534
Claims priority, application France, Jul. 5, 1979, 79 17444
Int. Cl.³ C08F *2/34*
U.S. Cl. 526—68 **2 Claims**



1. Process for the production of polymers of ethylene in a continuously operating reaction system under a pressure between about 400 and 3000 bars and a temperature between about 150° and 320° C., comprising separating the polymers formed from a reaction mixture in a first separation zone maintained at a pressure between about 100 and 500 bars to form a polymer stream and a gas stream, further separating the polymers from the first separation zone from residual gases in an intermediate separation zone maintained at a pressure between about 10 and 70 bars, mixing the residual gases separated in said intermediate zone with an ethylene feed stream, compressing said residual gas-ethylene feed mixture to the pressure of the first separation zone, and further separating the polymers from the intermediate separation zone in a second separation zone maintained at a pressure between about 1 and 1.5 bars.

4,342,854

SOLID POLYMERS OF 4-METHYL-1-PENTENE

John P. Hogan, and Robert L. Banks, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 648,364, Jun. 23, 1967, abandoned, which is a division of Ser. No. 558,530, Jan. 11, 1956, abandoned, which is a continuation-in-part of Ser. No. 333,576, Jan. 27, 1953, abandoned, and Ser. No. 476,306, Dec. 20, 1954, abandoned. This application Sep. 16, 1971, Ser. No. 181,185
Int. Cl.³ C08F *110/14, 4/24*
U.S. Cl. 526—75 **13 Claims**

1. A normally solid homopolymer of 4-methyl-1-pentene.

4,342,855

PROCESS FOR THE PRODUCTION OF POLYETHYLENE

Shinichi Akimoto, and Akio Kimura, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,686
Int. Cl.³ C08F *4/02, 10/02*
U.S. Cl. 526—124 **27 Claims**

1. In the process for producing polyethylene comprising polymerizing ethylene in the presence of an ethylene polymerization catalyst,

the improvement comprising

(i) carrying out said polymerization in the presence of an alcohol; and

(ii) said polymerization catalyst comprising:

(A) a solid catalyst component containing at least titanium, magnesium and chlorine,

(B) trialkylaluminum of the formula

$$R^1{}_3Al$$

wherein R^1 is an alkyl or cycloalkyl group containing from 1 to 12 carbon atoms; and

(C) a chlorine-containing aluminum compound of the formula

$$R^2{}_nAlCl_{3-n}$$

wherein R^2 is an alkyl or cycloalkyl group containing from 1 to 12 carbon atoms, and n is a real number of from 1 to 2;

said solid catalyst component (A) is obtained by reacting the (1) reaction product of magnesium dialkoxide of the formula

$$Mg(OR^4)_2$$

wherein R^4 is an alkyl, alkenyl, aryl, cycloalkyl, arylalkyl or alkylaryl group containing from 1 to 20 carbon atoms, and (2) silicon tetrachloride, with a chlorine-containing titanium compound of the formula

$$Cl_mTi(OR^5)_{4-m}$$

wherein R^5 is an alkyl or aryl group containing from 1 to 10 carbon atoms, and m is a real number of from 1 to 4.

4,342,856

PROPYLENE POLYMERIZATION PROCESS AND PRODUCT

Birendra K. Patnaik, Parsippany, N.J., assignor to El Paso Polyolefins Company, Paramus, N.J.

Filed Nov. 14, 1980, Ser. No. 206,810
Int. Cl.³ C08F 4/02, 10/06
U.S. Cl. 526—125 22 Claims

1. In a process for the production of a propylene polymer wherein propylene is polymerized in the presence of hydrogen as polymer melt flow modifier in a polymerization zone at pressures sufficient to maintain propylene in liquid phase and at temperatures between about 115° F. and about 165° F. in the presence of a catalyst composition containing the components

(a) an aluminum trialkyl at least partially complexed with an aromatic carboxylic acid ester electron donor and

(b) a solid complex of a titanium tri- or tetrahalide with an aromatic carboxylic acid ester electron donor supported on magnesium halide,

the components (a) and (b) being provided in a molar ratio of Al/Ti between about 10 and about 400,

the method of improving the melt flow of the polymer at reduced hydrogen concentration, which method comprises:

prior to its introduction into the polymerization zone admixing the complex of component (b) with an aromatic carboxylic acid ester electron donor in a mole ratio of carboxylic acid ester to titanium of from about 2:1 to about 30:1; and introducing said mixture directly to the reaction zone no later than about 5 days from the time of admixing.

4,342,857

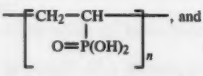
ANTIGINGIVITIS COMPOSITION COMPRISING VINYL PHOSPHONIC ACID/VINYL PHOSPHONYL FLUORIDE COPOLYMER

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,582
Int. Cl.³ C08F 8/12, 214/18, 230/02
U.S. Cl. 525—326.4 6 Claims

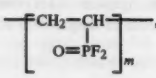
1. A water soluble copolymer composed predominantly of:

(A) units having the molecular configuration



, and

(B) units having the molecular configuration



the ratio of (A) units (n) to (B) units (m) ranging from about 2:1 to about 25:1.

6. A method of preparing a copolymer as defined in any of claims 1 to 5 comprising polymerizing a mixture of vinyl phosphonyl chloride, as precursor of the (A) units, and vinyl phosphonyl fluoride under substantially anhydrous conditions in the presence of a free radical catalyst, and then mixing the resulting copolymer with water to hydrolytically convert the vinyl phosphonyl chloride units in the copolymer to vinyl phosphonic acid (A) units.

4,342,858

POLYMERIC POLYELECTROLYTES

Daniel F. Herman, Princeton, and Uno Kruse, East Windsor, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

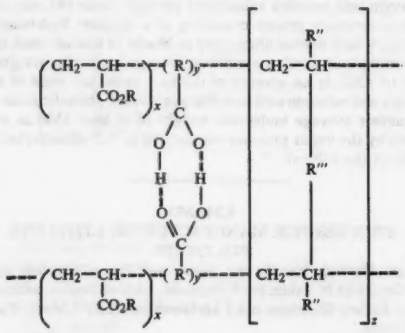
Continuation-in-part of Ser. No. 56,564, Jul. 11, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,619
Int. Cl.³ C08F 20/04
U.S. Cl. 526—317 7 Claims

1. A water, solvent-insoluble crosslinked suspension polymer which comprises:

(a) from about 15% to about 50% by weight of an olefinically-unsaturated carboxylic acid containing an activated carbon-to-carbon olefinic double bond wherein said carboxyl group is crosslinked to another carboxyl group through hydrogen bonding;

(b) from about 49.07% to about 82% by weight of an alkyl acrylate wherein the alkyl group has from 1 to 6 carbon atoms; and

(c) from about 0.03% to about 3.0% by weight of a crosslinking agent which are polyunsaturated polymerizable vinyl monomers containing two or more free radical polymerizable ethylenic groups, said crosslinking agent being introduced directly into the carbon-carbon backbone of the polymer; and having the formula:



wherein:

X represents the relative number of alkyl acrylate groups with R being 1 to 6 carbon atoms as component (b);

y represents the relative number of olefinically-unsaturated carboxylic acid groups with R' being the hydrocarbon portion of the carboxylic acid compounds of component (a);

z represents the relative number of crosslinking agents of component (c) with R'' being hydrogen or methyl and R''' comprising the remaining portion of component (c).

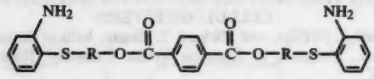
4,342,859

BIS(AMINOPHENYLTHIOALKYL)TEREPHTHALATE AND HARDENER FOR POLYURETHANE ELASTOMER THEREOF

Takao Harada, Shizuoka; Hideaki Ohashi, Fujieda; Wataro Koike, Shizuoka; Chihiro Yazawa, Yokohama, and Kazuko Nanjo, Tokorozawa, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

Filed May 27, 1980, Ser. No. 153,417
Int. Cl.³ C08G 18/32; C07C 69/82
U.S. Cl. 528—64 2 Claims

2. A polyurethane elastomer including as a hardener therein a hardening effective amount of a bis(aminophenylthioalkyl)-terephthalate having the formula



wherein R represents a C_1–C_3 alkyl group.

4,342,860

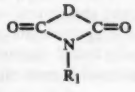
POLYISOCYANATO/IMIDO COMPOSITIONS AND IMIDE GROUP CONTAINING POLYMERS PREPARED THEREFROM

Jean-Louis Locatelli, Vienne, and Jean Robin, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 865,210, Dec. 28, 1977, abandoned. This application May 22, 1980, Ser. No. 152,416
Claims priority, application France, Dec. 31, 1976, 76 39874
Int. Cl.³ C08G *18/04*
U.S. Cl. 528—59 55 Claims

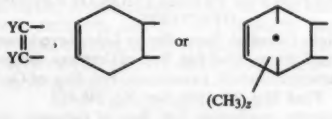
1. A composition of matter comprising (A) at least one organic polyisocyanate, and (B) at least one unsaturated imide selected from the group consisting of:

(i) a monoimide of the formula:



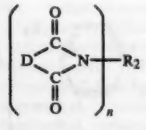
[I]

wherein D represents



in which Y is H, CH_3 or Cl, and Z is either 0, 1 or 2, and R_1 is hydrogen or a monovalent aliphatic, cycloaliphatic or aromatic hydrocarbon radical containing up to 20 carbon atoms; and

(ii) a polyimide of the formula:



[II]

wherein D is as above, n is a number ranging from 2 to 5 and R_2 is a radical having the valence n, such R_2 radical being selected from the group consisting of a wholly hydrocarbon radical, a heteroatom interrupted hydrocarbon radical, and a heterocycle containing hydrocarbon radical, and wherein in said composition the ratio r of total isocyanate functions in the polyisocyanate (A) to total polymerizable double bonds in the unsaturated imide (B) is in the range of from 0.3 to 15.

4,342,861

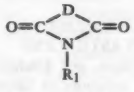
POLYISOCYANATO/IMIDO COMPOSITIONS AND IMIDE GROUP CONTAINING POLYMERS PREPARED FROM POLYISOCYANATE, POLYIMIDE AND COPOLYMERIZABLE COMONOMER

Jean-Louis Locatelli, Vienne, and Jean Robin, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 112,932, Jan. 17, 1980, Pat. No. 4,302,572, which is a division of Ser. No. 865,210, Dec. 28, 1977, abandoned. This application Jan. 15, 1981, Ser. No. 225,391
Claims priority, application France, Dec. 31, 1976, 76 39874
Int. Cl.³ C08G *18/02*
U.S. Cl. 528—59 25 Claims

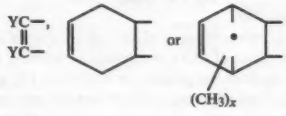
1. A composition of matter comprising (A) at least one organic polyisocyanate, (B) at least one unsaturated imide selected from the group consisting of:

(i) a monoimide of the formula:



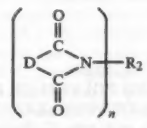
[I]

wherein D represents



in which Y is H, CH_3 or Cl, and Z is either 0, 1 or 2, and R_1 is hydrogen or a monovalent aliphatic, cycloaliphatic or aromatic hydrocarbon radical containing up to 20 carbon atoms; and

(ii) a polyimide of the formula:



[II]

wherein D is as above, n is a number ranging from 2 to 5 and R_2 is a radical having the valence n, such R_2 radical being selected from the group consisting of a wholly hydrocarbon radical, a heteroatom interrupted hydrocarbon radical, a heterocycle radical and a heterocycle containing hydrocarbon radical, and (C) a comonomer copolymerizable with the polyisocyanate (A), and wherein in said composition the ratio r of total isocyanate functions in the polyisocyanate (A) to total polymerizable double bonds in the unsaturated imide (B) is in the range of from 0.3 to 15.

4,342,862

POLYESTERS OF TRANS-1,4-CYCLOHEXANEDICARBOXYLIC ACID AND 2-PHENYLHYDROQUINONE AND MODIFICATIONS THEREOF

Winston J. Jackson, Jr., Kingsport, Tenn., and William R. Darnell, Weber City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,585
Int. Cl.³ C08G *63/18*
U.S. Cl. 528—176 8 Claims

1. Liquid crystalline polyesters having film- and fiber-forming molecular weights, said polyesters being prepared by react-

ing (A) at least 20 mole percent of the diacid chloride of 1,4-cyclohexanedicarboxylic acid of which at least 80 mole percent is trans-1,4-cyclohexanedicarboxylic acid, (B) 0–80 mole percent of the diacid chloride of other acids selected from terephthalic, terephthalic acid substituted with 1 or 2 chlorine or bromine atoms or an alkyl group containing 1 to 4 carbon atoms, 2,6-naphthalenedicarboxylic acid and 2,6-naphthalenedicarboxylic acid substituted with 1 or 2 chlorine or bromine atoms or an alkyl group containing 1 to 4 carbon atoms, (C) at least 20 mole percent 2-phenylhydroquinone, (D) 0–45 mole percent hydroquinone, and (E) 0–35 mole percent of a hydroquinone substituted with chlorine or bromine atoms or an alkyl group containing 1 to 4 carbon atoms.

4,342,863

PLASTIC LENS

Yorikatsu Hohokabe, Tokyo, and Eiichiro Takiyama, Kamakura, both of Japan, assignors to Showa Denko K.K. and Showa Highpolymer Co., Ltd., both of Japan

Filed Feb. 12, 1981, Ser. No. 233,765
Claims priority, application Japan, Feb. 19, 1980, 55/18490
Int. Cl.³ C08G *75/00*
U.S. Cl. 528—360 **2 Claims**

1. A plastic lens composed of a cured product of a mixture or a reaction product of (A) a compound containing at least two unsaturated cycloacetal groups per molecule, (B) a compound containing at least two mercapto groups per molecule and (D) an aliphatic polyvinyl compound selected from the group consisting of ethylene glycol diacrylate, ethylene glycol dimethacrylate, trimethylolpropane triacrylate, trimethylolpropane trimethacrylate, pentaerythritol tetraacrylate and dipentaerythritol hexaacrylate.

4,342,864

STARCH-AMINE-BASED POLYETHER POLYOLS AND PROCESS OF PREPARATION

Stephen Fuzesi, Hamden, and John G. Bayusik, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 22, 1980, Ser. No. 218,870
Int. Cl.³ C07H *15/04*; C08B *31/10*; C07H *15/08*
U.S. Cl. 536—18 **21 Claims**

14. A starch-amine-based polyether polyol prepared by

a. forming a crude polyglucoside reaction product by reacting in the presence of a catalytic proportion of an acid catalyst,

(1) starch and

(2) a polyhydric alcohol containing at least two hydroxyl groups, the proportion of said alcohol being at least 0.3 mole of alcohol per glucose unit weight of starch, and

b. admixing said crude polyglucoside reaction product with an amine in the presence of a basic catalyst, maintaining said mixture at a temperature of from 100° to 165° C., and introducing into said mixture an alkylene oxide having between 2 and about 6 carbon atoms, said amine being employed in an amount of at least about 0.1 mole to about 10 moles per glucose unit weight of starch and being selected from the group consisting of an aliphatic amine having 1–8 carbon atoms, an aromatic primary amine having 6–8 carbon atoms, an alkanolamine in which each alkanol group contains 2–5 carbon atoms, and a mixture thereof.

4,342,865

HIGH TEMPERATURE BLEACHING METHOD FOR CELLULOSE ESTERS

Richard J. Brewer, and Richard T. Bogan, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 182,904, Sep. 2, 1980, abandoned. This application Jul. 27, 1981, Ser. No. 286,919
Int. Cl.³ C08C *18/30*
U.S. Cl. 536—76 **3 Claims**

1. Improved high temperature method for bleaching cellulose esters consisting of cellulose acetate, cellulose acetate propionate and cellulose acetate butyrate, said method comprising:

adding at a temperature of about 80° C. to about 150° C. to the hydrolysis solution during the hydrolysis reaction of the cellulose ester a bleaching agent comprising a mixture of about 0.1 to about 0.3 pphr (parts per hundred parts resin) hydrogen peroxide and about 0.1 to about 0.3 pphr of at least one monopersulfate salt in an aqueous solution, said monopersulfate salt being selected from the group consisting of sodium, potassium and lithium or mixtures thereof.

4,342,866

HETEROPOLYSACCHARIDE S-130

Kenneth S. Kang, LaJolla, and George T. Veeder, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 73,573, Sep. 7, 1979, abandoned. This application Apr. 23, 1981, Ser. No. 256,632
Int. Cl.³ C07H *1/00*; C08B *37/00*
U.S. Cl. 536—119 **1 Claim**

1. Heteropolysaccharide S-130, which is principally carbohydrate, comprising 2.8–7.5% (calculated as O-acetyl) O-acyl groups, 11.6–14.9% glucuronic acid, and the neutral sugars mannose, glucose, and rhamnose in the approximate molar ratio 1:2:2, wherein the ratio of terminally linked rhamnose to 1,4 linked rhamnose is 1:2 and the glucose is primarily 1,3 linked.

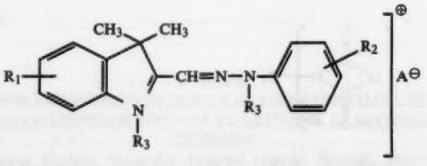
4,342,867

PROCESS FOR THE PREPARATION OF CATIONIC DYESTUFFS

Harald Gleinig, Odenthal; Bernd Berger-Lohr, Leverkusen, and Kurt Breig, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 19, 1981, Ser. No. 245,412
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013272
Int. Cl.³ C07D *209/40*
U.S. Cl. 542—417 **7 Claims**

1. Process for the preparation of cationic dyestuffs of the general formula



wherein

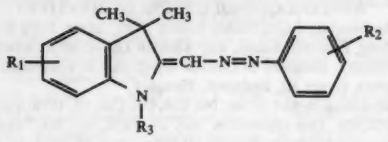
R_1 represents hydrogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, nitro or halogen,

R_2 represents hydrogen, C_1- to C_4-alkyl, C_1-to C_4-alkoxy, halogen or phenylazo,

R_3 represents C_1- to C_3-alkyl and

$A^{\ominus}$ represents an anion,

by reacting azo bases of the general formula



with dialkyl sulphates of the general formula

$$(R_3—O—)_2SO_2$$

in the absence of organic solvents and in the presence of water, and, if desired, by replacing the alkylsulphate anion with another anion, characterised in that the weight ratio of azo base to water is 100:15–100 and the molar ratio of azo base to dialkyl sulphate is 1:1.5–2.5.

4,342,868

2-DESCARBOXY-2-(TETRAZOL-5-YL)-16,16-DIMETHYL-17-(2-FURYL)-ω-TRISNORPROSTAGLANDIN E_2

Michael R. Johnson, Gales Ferry; Thomas K. Schaaf, and Hans-Jurgen E. Hess, both of Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 805,879, Jun. 13, 1977, abandoned. This application Apr. 1, 1981, Ser. No. 249,930

Int. Cl.³ C01D *405/08;* **A61K** *31/413*

U.S. Cl. 542—431 **1 Claim**

1. 2-Descarboxy-2-(tetrazol-5-yl)-16,16-dimethyl-17-(2-furyl)-ω-trisnorprostaglandin E_2.

4,342,869

CEPHALOSPORIN ANTIBIOTICS

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

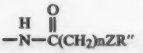
Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,115

Claims priority, application United Kingdom, Jun. 16, 1970, 29158/70; Jul. 9, 1970, 33415/70; Sep. 30, 1970, 46556/70; Dec. 10, 1970, 58731/70; Jan. 27, 1971, 3296/71; Jan. 27, 1971, 3297/71; Jan. 27, 1971, 3298/71; Feb. 8, 1971, 4179/71; Feb. 11, 1971, 4479/71; Feb. 11, 1971, 4480/71; Feb. 26, 1971, 5588/71; Apr. 30, 1971, 29158/71

Int. Cl.³ C07D *501/20*

U.S. Cl. 544—21 **11 Claims**

1. The compound of 3-A-7-X'-7-acylamido-3-cephem-4-carboxylic acid wherein X' is chloro, bromo or iodo; A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzoyl)oxymethyl, (p-methylbenzoyl)oxymethyl, pivaloyloxymethyl, (1-adamantyl)carboxymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)oxymethyl, (N-ethylcarbamoyl)oxymethyl, [N-(2-chloroethyl)carbamoyl]oxymethyl, (N-phenylcarbamoyl)oxymethyl, (N-p-sulfophenylcarbamoyl)oxymethyl, p-carboxymethylphenylcarbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)-thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbamoylthiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethylpiperazinium-1-thiocarbonylthiomethyl, 2-furoylthiomethyl, isothiouroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxymethyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R:2S-epoxypropylphosphonyloxymethyl, or pyridinium methyl; and acylamido is



wherein n is 1–4, Z is oxygen or sulfur, and R" is benzyl, p-hydroxybenzyl, 4-amino-4-carboxybutyl, methyl, cyanomethyl, 2-pentenyl, n-amyl, n-heptyl, ethyl, 3- or 4-nitrobenzyl, phenethyl, β,β-diphenylethyl, methyldiphenylmethyl, triphenylmethyl, 2-methoxyphenyl, 2,6-dimethoxyphenyl, 2,4,6-trimethoxyphenyl, 3,5-dimethyl-4-isoxazolyl, 3-butyl-5-methyl-4-isoxazolyl, 5-methyl-3-phenyl-4-isoxazolyl, 3-(2-chlorophenyl)-5-methyl-4-isoxazolyl, 3-(2,6-dichlorophenyl)-5-methyl-4-isoxazolyl, D-4-amino-4-carboxybutyl, D-4-N-benzoylamino-4-carboxy-n-butyl, p-aminobenzyl, o-aminobenzyl, m-aminobenzyl, (3-pyridyl)-methyl, 2-ethoxy-1-naphthyl, 3-carboxy-2-quinoxalinyl, 3-(2,6-dichlorophenyl)-5-(2-furyl)-4-isoxazolyl, 3-phenyl-4-isoxazolyl, 5-methyl-3-(4-guanidinophenyl)-4-isoxazolyl, 4-guanidinomethylphenyl, 4-guanidinomethylbenzyl, 4-guanidinobenzyl, 4-guanidinophenyl, 2,6-dimethoxy-4-guanidinophenyl, o-sulfobenzyl, p-carboxymethylbenzyl, p-carbamoylmethylbenzyl, m-fluorobenzyl, m-bromobenzyl, p-chlorobenzyl, p-methoxybenzyl, 1-naphthylmethyl, 3-isothiazolylmethyl, 4-isothiazolylmethyl, 5-isothiazolylmethyl, 4-pyridylmethyl, 5-isoxazolylmethyl, 4-methoxy-5-isoxazolylmethyl, 4-methyl-5-isoxazolylmethyl, 1-imidazolylmethyl, 2-benzofuranylmethyl, 2-indolylmethyl, 2-phenylvinyl, 2-phenylethynyl, 2-(5-nitrofuranyl)vinyl, phenyl, o-methoxyphenyl, o-chlorophenyl, o-phenylphenyl, p-aminomethylbenzyl, 1-(5-cyanotriazolyl)methyl), difluoromethyl, dichloromethyl, dibromomethyl, 1-(3-methylimidazolyl)methyl, 2- or 3-(5-carboxymethylthienyl)-methyl, 2- or 3-(4-carbamoylthienyl)methyl, 2- or 3-(5-methylthienyl)methyl, 2- or 3-(5-methoxythienyl)methyl, 2- or 3-(4-chlorothienyl)methyl, 2- or 3-(sulfothienyl)methyl, 2- or 3-(5-carboxythienyl)methyl, 3-(1,2,5-thiadiazolyl)methyl, 3-(4-methoxy-1,2,5-thiadiazolyl)methyl, 2-furylmethyl, 2-(5-nitrofuryl)methyl, 3-furylmethyl, 2-thienylmethyl, 3-thienylmethyl, and tetrazolylmethyl; and the pharmaceutically acceptable salts thereof, or the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin.

4,342,870

NOVEL 3-(1-PIPERIDINYLALKYL)-4H-PYRIDO[1,2-A]PYRIMIDIN-4-ONE DERIVATIVES

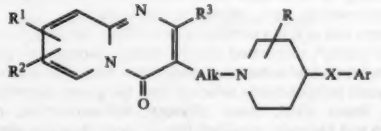
Ludo E. J. Kennis, Turnhout, and Josephus C. Mertens, Oud-Turnhout, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 134,845, Mar. 28, 1980, abandoned. This application Sep. 29, 1980, Ser. No. 191,632

Int. Cl.³ C07D *401/12*

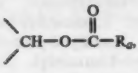
U.S. Cl. 544—282 **6 Claims**

1. A chemical compound selected from the group consisting of a 3-[(1-piperidinyl)alkyl]-4H-pyrido[1,2-a]pyrimidin-4-one derivative having the formula

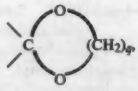


and the pharmaceutically acceptable acid addition salts thereof, wherein R^1 and R^2 are each independently selected

from the groups consisting of hydrogen, lower alkyl, lower alkyloxy, halo and trifluoromethyl;
R^3 is a member selected from the group consisting of hydrogen, lower alkyl and aryl;
Alk is a lower alkylene radical;
R is a member selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkyloxy and hydroxymethyl in the 2-, 3- or 4-position of the piperidine ring;
X is a member selected from the group consisting of >C=O, >CHOH,

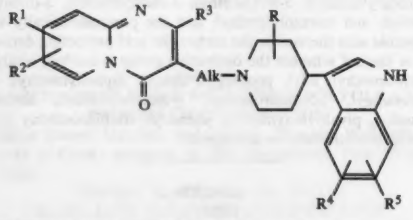


$>CH_2$, >C(O-lower alkyl)$_2$,



>C=NOH and >C=N-NH_2, wherein said R_q is hydrogen or lower alkyl and said q is the integer 2 or 3; and
Ar is aryl; wherein said aryl is a member selected from the group consisting of phenyl, substituted phenyl, thienyl, furanyl and pyridinyl, wherein said substituted phenyl has from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, trifluoromethyl, nitro, amino and hydroxy, provided that no more than one substituent is nitro and further provided that said substituents are not simultaneously hydroxy and loweralkyloxy.

6. A chemical compound selected from the group consisting of a 4H-pyrido[1,2-a]pyrimidin-4-one derivative having the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein:
R^1 and R^2 are each independently selected from the group consisting of hydrogen, lower alkyl, lower alkyloxy, halo and trifluoromethyl;
R^3 is a member selected from the group consisting of hydrogen, lower alkyl and aryl;
Alk is a lower alkylene radical;
R is a member selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkyloxy, hydroxymethyl in the 2-, 3- or 4-position of the piperidine ring; and
R^4 and R^5 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, lower alkyloxy, trifluoromethyl, nitro, amino and hydroxy;
wherein said aryl is a member selected from the group consisting of phenyl, substituted phenyl, thienyl, furanyl and pyridinyl, wherein said substituted phenyl has from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, trifluoromethyl, nitro, amino and hydroxy, provided that no more than one substituent is nitro and further provided that said substituents are not simultaneously hydroxy and loweralkyloxy.

4,342,871

BENZO(A)QUINOLIZIDINE DERIVATIVES

Csaba Szantay; Lajos Szabo; Laszlo Töke; Istvan Toth; Sandor Virag; Erzsebet Kanyo, and Agoston David, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt, Budapest, Hungary

Continuation-in-part of Ser. No. 624,470, Oct. 21, 1975, Pat. No. 4,102,886. This application Nov. 24, 1976, Ser. No. 744,608
Claims priority, application Hungary, Oct. 23, 1974, CI 1514; Sep. 11, 1975, CI 1603
Int. Cl.[3] **C07D** *455/03;* **A61K** *31/47*
U.S. Cl. 546—65 **1 Claim**

1. 2-oxo-3-(beta-cyano-ethyl)-9,10-methylenedioxy-1,2,3,4,6,7-hexahydro-11bH-benzo(a)quinolizidine.

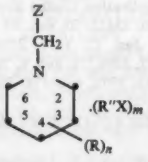
4,342,872

2-(SUBSTITUTEDPIPERIDYLMETHYL) PROPENE AND PROPANE NITRILES

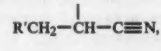
Nathaniel Grier, Englewood; Richard A. Dybas, Somerville, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 8,985, Feb. 5, 1979, Pat. No. 4,274,700, which is a continuation-in-part of Ser. No. 795,693, May 11, 1977, abandoned. This application Oct. 6, 1980, Ser. No. 194,489
Int. Cl.[3] **C07D** *401/05*
U.S. Cl. 546—186 **4 Claims**

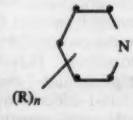
1. A compound of the formula:



where Z is



where R'' is hydrogen, C_1–C_{18} alkyl, benzyl, phenethyl; R is in the 2-, 3-, or 4-positions and is hydroxy or hydroxyalkyl; R' is



where R is as previously defined, or
R' is piperidino;
n is the integer of 1 to 4;
m is the integer 0 or at least 1; and
X is a suitably charged anion.

4,342,873

2-(SUBSTITUTED PIPERIDYLMETHYL) PROPENE AND PROPANE NITRILES

Nathaniel Grier, Englewood; Richard A. Dybas, Somerville, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 8,985, Feb. 5, 1979, Pat. No. 4,247,700, which is a continuation-in-part of Ser. No. 795,693, May 11, 1977, abandoned. This application Jan. 26, 1981, Ser. No. 228,520

Int. Cl.[3] C07D *401/06*

U.S. Cl. 546—186 1 Claim

1. bis-2-[4,4'-(1,3-trimethylene)-1,1'-dipiperidyl]methyl-propenenitrile.

4,342,874

2-[2'-(HYDANTO-5-YL)-ETHYL]-5,5-DIMETHYL-1,3-DIOXANE

Axel Kleemann, and Marc Samson, both of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

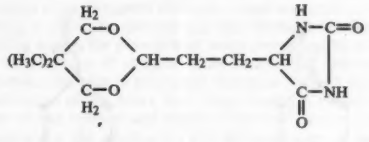
Filed Nov. 10, 1981, Ser. No. 320,130

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043250

Int. Cl.[3] C07D *405/06*

U.S. Cl. 548—309 1 Claim

1. 2-[2'-(hydanto-5-yl)-ethyl]-5,5-dimethyl-1,3-dioxane of the formula



(I)

4,342,875

METHOXY CARBOXYLIC ACID ESTERS AND USE AS ULTRAVIOLET STABILIZERS

Robert G. Gough, Cincinnati, Ohio, assignor to Cincinnati-Milacron, Inc., Cincinnati, Ohio

Division of Ser. No. 297,446, Oct. 13, 1972, Pat. No. 3,814,729. This application Jan. 9, 1974, Ser. No. 431,965

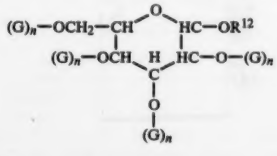
Int. Cl.[3] C07C *69/76*

U.S. Cl. 560—64 40 Claims

1. A compound having a formula

I

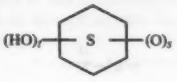
where R is alkoxyphenyl, dialkoxyphenyl or alkylene dioxyphenyl, the alkoxy groups having 1 to 8 carbon atoms, and the alkylene group having 1 to 4 carbon atoms, q is 1 to 6, Z is



(a)

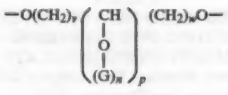
where R^{12} is lower alkyl and G is H or

wherein R^8 is hydrocarbyl and where n is 0 or 1 and at least one of the n's must be zero;



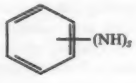
(b)

where s is 1 to 3 and t is from 1 to 2, the total of s and t being not over 3;

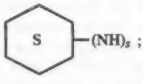


(c)

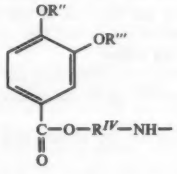
where v and w are each 1 to 4 and p is 2 to 4



(d)

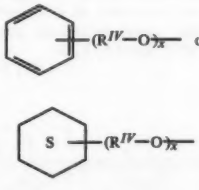


(e)



(f)

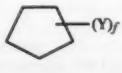
where R'' and R''' are 1 to 8 carbon atom alkyl or where R'' and R''' together with the oxygen atoms attached thereto and the adjacent carbon atoms of the benzene ring form a 5 to 6 membered heterocyclic ring and R^{IV} is 1 to 4 carbon atom alkylene;



(g)

where x is 2 to 3;

(h) tertiary alkyloxy of 4 to 18 carbon atoms



(i)

where Y is

$$-O-,\ -R^6-O-$$

where R^6 is 1 to 3 carbon atoms,

$$-\overset{H}{N}-,$$

or

$$-R^6-\overset{H}{N}-$$

and f is 2 to 4.

4,342,876

METHOD FOR OXIDATION OF P-XYLENE AND METHOD FOR PREPARING DIMETHYLTEREPHTHALATE

Gilbert E. Klingman, Houston, Tex., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Dec. 22, 1980, Ser. No. 219,184
Int. Cl.³ C07C *67/00, 67/08, 67/39, 51/265*
U.S. Cl. 560—77 **10 Claims**

7. In a method of preparing dimethylterephthalate by catalytically oxidizing p-xylene and p-methyltoluate to form an oxidate comprising p-toluic acid and monomethylterephthalate and esterifying said oxidate to form dimethylterephthalate and p-methyltoluate, the improvement comprising:

(a) providing at least one induced flow loop reactor, each such reactor having first and second substantially vertical reactor legs interconnected to form a loop, at least one liquid reactant inlet means, at least one oxidate outlet means and at least one gas inlet means for introducing oxygen-containing gas into one of said first and second reactor legs, either of which said first and second reactor legs having cooling means;

(b) introducing said oxygen containing gas through said gas inlet means to partially gasify the reaction medium in the first reactor leg;

(c) venting gas from the top of said loop to substantially degasify said reaction medium as it flows from said first reactor leg to said second reactor leg;

(d) cooling said reaction medium as it flows through said reactor legs to remove the heat produced by said oxidation of p-xylene and p-methyltoluate;

(e) the temperature of the reaction medium being 140°–170° C.;

said gas inlet means being disposed in said first reactor leg at a vertical distance from the top of said loop such that said introducing causes the reaction medium in said second reactor leg to flow downward and gasified reaction medium in said first reactor leg to flow upward at a rate sufficient to maintain the temperature of the reaction medium within a variation of 10° F.

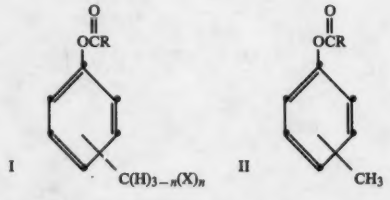
4,342,877

PROCESS FOR THE PREPARATION OF α-HALOGENATED CRESOL ESTERS

Dah-Chieh O. Cheng; Joseph S. Bowers, Jr., and Ronald J. Maner, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,661
Int. Cl.³ C07C *67/287, 69/24, 69/157*
U.S. Cl. 560—130 **9 Claims**

1. Process for the preparation of Compound I by treating Compound II with X_2 or SO_2X_2 at a temperature of about 60° to 85° C. in the presence of a halogenation-promoting free radical initiator and an anhydride having the formula $(RCO)_2O$ while eliminating the acid halide formed having the formula RCOX from the reaction mixture, wherein Compounds I and II have the formulas



I II

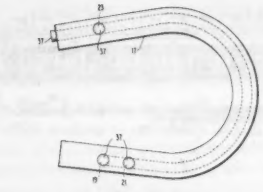
and R is C_1–C_3 alkyl, X is Cl or Br and n is 1, 2 or 3.

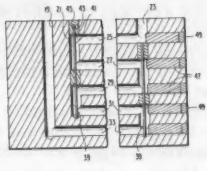
4,342,878

WATER-COOLED ELECTRODE HOLDER

James G. Wilson, II, Huntington, and P. Fred Hammers, Barboursville, both of W. Va., assignors to Wilson Welding Company, Inc., Huntington, W. Va.

Filed May 9, 1980, Ser. No. 148,290
Int. Cl.³ H05B 7/105
U.S. Cl. 373—94 2 Claims





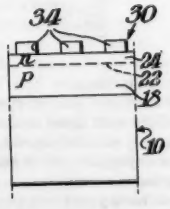
1. An electrode holder comprising a U-shaped metal bowl in the form of an elongated slab whose ends are straight, the bowl having a circuitous passageway therethrough for the flow of cooling water, the passageway being comprised by a plurality of drilled holes of circular cross section that intersect each other at a plurality of points and that open through the longitudinal edges of the bowl, first plugs closing a plurality of the ends of said holes at said edges of the bowl, and second plugs interrupting the communication between some of said holes but leaving a single circuitous passageway between said inlet and outlet through unplugged portions of said holes, a plurality of said holes extending through one of said straight ends and lengthwise of the slab, some of said first plugs closing the ends of the last-named plurality of holes, one of said holes extending perpendicular to and intersecting the last-named plurality of holes, at least one said second plug closing said one hole between its ends, at least one said first plug contacting at least one end of a said second plug and retaining the last-named second plug in place.

4,342,879

THIN FILM PHOTOVOLTAIC DEVICE

Anthony W. Catalano, and Manjul Bhushan, both of Wilmington, Del., assignors to The University of Delaware, Newark, Del.

Filed Oct. 24, 1980, Ser. No. 200,447
Int. Cl.³ H01L 31/06
U.S. Cl. 136—265 8 Claims



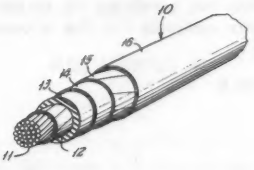
1. In a photovoltaic device having an ohmic back contact and a transparent electrical contact with at least one semiconductor layer therebetween of a material of the type formed by high temperature growth, the improvement being said device is a homojunction with said semiconductor layer having one region of p-type conductivity and an adjacent region of n-type conductivity with the electrical junction therebetween, said semiconductor layer being made of a material from the class of isostructural compounds comprised of elements selected from Groups IIB and VA of the Periodic Table, and said n-type conductivity region of said semiconductor layer being extrinsically doped with an element selected from groups IA and IIA of the Periodic Table.

4,342,880

ELECTRIC CABLE FOR MEDIUM VOLTAGE

Mario Castelli, Bergamo, and Bruno Martini, Milan, both of Italy, assignors to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Aug. 20, 1980, Ser. No. 179,638
Claims priority, application Italy, Aug. 30, 1979, 25354 A/79
Int. Cl.³ H01B 9/02
U.S. Cl. 174—36 7 Claims



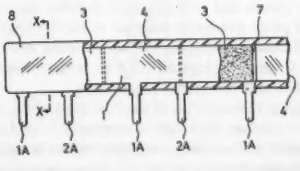
1. A medium voltage electric cable having at least one conductor, each conductor being covered by an inner semiconductive screen in contact therewith, a layer of extruded, cross-linked polymeric insulation around said inner screen, and a readily peelable outer semiconductive screen around said layer of insulation and adhering thereto, said outer semiconductive screen being a chemically cross-linked rubber comprising a cross-linked blend of 50–70 parts by weight of nitrile rubber and 50–30 parts by weight of ethylene-propylene rubber, carbon black and cross-linking agents, said blend constituting at least about one-half by weight of the material of said outer screen.

4,342,881

LAMINATED BUS BAR AND METHOD OF MANUFACTURE

Sunichi Fukuda, Kukizaki, and Masaaki Muto, Ryugasaki, both of Japan, assignors to Rogers Corporation, Rogers, Conn.

Filed May 29, 1980, Ser. No. 154,375
Claims priority, application Japan, May 31, 1979, 54-067862
Int. Cl.³ H01B 5/00
U.S. Cl. 174—72 B 9 Claims



1. A bus bar comprising:
a pair of elongated parallel flat bus bar conductors;
a plurality of thin, flat, rigid dielectric elements, said dielec-

tric elements being positioned between and spacially displaced from said bus bar conductors, said dielectric elements each having a pair of oppositely disposed planar surfaces, said surfaces of said dielectric elements being parallel to said bus bar conductors, said electrical elements being spacially displaced from one another in a linear array; and

means bonding said planar surfaces of said dielectric elements to said bus bar conductors, said bonding means being comprised of conductive metal which melts and flows at a temperature below the melting point of the bus bar conductors and the dielectric element.

4,342,882

AUTOMATIC PAUSE GENERATOR FOR DIALERS

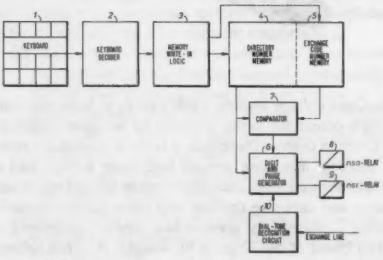
Peter Gravenhorst, Berlin, and Johannes Krenz, Kiel, both of Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany and Hagenuk, Kiel, both of, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 192,890

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940490

Int. Cl.³ H04M *1/274*

U.S. Cl. 179—90 B **5 Claims**



1. An automatic pause generator for dialers in telephone terminals with pulse dialing and additional features such as abbreviated dialing, re-dialing, direct dialing and the like, said pause generator comprising:

a keyboard;

a keyboard decoder connected to said keyboard;

exchange code number memory means coupled to said keyboard and said keyboard decoder for storing at least one exchange code number containing at least one digit which is selectively changeable;

directory number memory means coupled to said keyboard decoder to store at least one directory number input from said keyboard for transmission to a telephone line;

comparator means connected from said exchange code number memory means and said directory number memory means;

a digit and pause generator coupled to said comparator means and said directory number memory means; and

dialing and speech relays adapted to connect said digit and pulse generator to said telephone line;

whereby upon transmission of the first digit of the transmitted directory number, said digit is compared in said comparator means with at least said one digit stored in said exchange code number memory means and upon coincidence of such digits, a pause criterion is supplied to said digit and pulse generator by said directory number memory means thereby producing a pause in the number being transmitted to said telephone line.

4,342,883

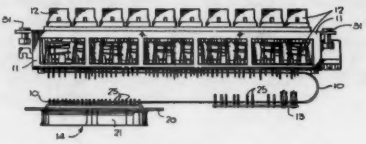
PUSHBUTTON SWITCH ASSEMBLIES FOR TELEPHONE SETS

William F. Wernet, Nashville, and Steve Miller, Smyrna, both of Tenn., assignors to Northern Telecom, Inc., Ottawa, Canada

Filed Aug. 22, 1979, Ser. No. 68,583

Int. Cl.³ H04Q *1/16*

U.S. Cl. 179—99 R **6 Claims**



1. A pushbutton switch assembly for a telephone set, comprising:

an array of pushbutton switches having pushbuttons extending from a top surface and a plurality of terminal pins extending from a bottom surface;

a terminal block comprising a circuit board having a plurality of terminals at one end of the board and a plurality of terminal pins at the other end of the board;

a connector comprising a base and a plurality of terminals extending from the base in one direction and terminal pins extending from the base in an opposite direction to said terminals;

an elongate flexible circuit member interconnecting said array of pushbutton switches, said terminal block and said connector, said terminal pins of the pushbutton switch assembly, terminal block and connector extending through said flexible circuit member and soldered to contact areas on the flexible circuit member;

the flexible circuit member foldable at one side of the terminal block to hold at least the connector back under the remainder of the flexible circuit member.

4,342,884

PISTON UNIT

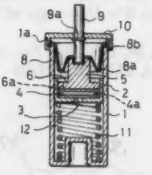
Itsuki Ban, 829, Higashi, Oizumi-machi, Nerima-ku, Tokyo, and Hidenori Kanno, 694-11, Yagigaya-cho, Funabashi-shi, Chiba-ken, both of Japan

Filed Jun. 11, 1979, Ser. No. 47,047

Claims priority, application Japan, Jun. 14, 1978, 53-70975; Jul. 18, 1978, 53-86695; Sep. 26, 1978, 53-131262[U]; Oct. 19, 1978, 53-127848; Nov. 14, 1978, 53-155724[U]; Dec. 26, 1978, 53-159365

Int. Cl.³ H01H *7/03, 35/38*

U.S. Cl. 200—34 **18 Claims**



1. A piston unit comprising:

cylinder means having a pair of opposed axial ends and substantially filled with liquid medium;

piston means slidably mounted in said cylinder means;

spring means for urging said piston means toward one axial end of said cylinder means;

an operation rod having one end portion coupled to said piston means so as to be movable therewith and a shank portion extending to the outside of said cylinder means;

sealing means for sealing said liquid medium in said cylinder means, said sealing means including a flexible membrane having a central portion fixedly interposed between said one end portion of said operation rod and said piston means and a corrugated portion integrally extending from said central portion, said corrugated portion having a peripheral edge region liquid sealingly engaged with said cylinder means such that said membrane seals said liquid medium in said cylinder means and defines a space within the cylinder means which is devoid of the liquid medium, said operation rod being situated in said space fluidly isolated from and not in contact with said liquid medium; and

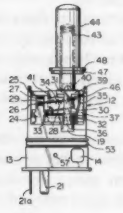
control means for providing that fluid resistance presented by said liquid medium to movement of said piston means toward one of said ends of said cylinder means is different from the fluid resistance presented by said liquid medium to movement of said piston means toward the other one of said ends of said cylinder means, said control means including a through bore formed in said piston means and a valve member coupled to said piston means adapted to open and close said through bore, said valve member being plate-shaped and having a small bore therein situated in substantially opposed relationship to said through bore.

4,342,885

LIMIT SWITCH

Isoo Kashima; Yosio Takase, and Masami Mishina, all of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Nov. 19, 1980, Ser. No. 208,424
Claims priority, application Japan, Mar. 27, 1980, 55-38208
Int. Cl.³ H01H *3/16, 5/06*
U.S. Cl. 200—47 **10 Claims**



1. A limit switch comprising:

a hollow housing having an open bottom and a guide cylinder projecting upwardly from a top of said housing,

a casing,

electrical contact means carried by said casing, said contact means comprising at least one movable contact and at least one stationary contact, said movable contact being movable between first and second positions,

wherein said movable and stationary contacts interengage in one of said first and second positions and disengage in the other of said positions,

plunger means mounted on said casing in a manner forming with said casing and said contacts a unit capable of being inserted upwardly into said open bottom of said housing, with a part of said plunger means passing upwardly through and beyond said guide cylinder,

said plunger means being operably connected to said movable contact to move the latter and being movable upwardly and downwardly relative to said casing and said stationary contact, said contacts being in said first position when said plunger means is in a given downward position and being in said second position when said plunger means is in an upward position,

spring means for yieldably urging said plunger means upwardly, and

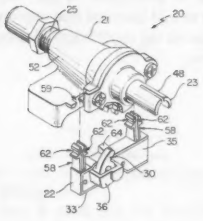
fixing means for fixedly mounting said casing to said housing at a selected position of adjustment relative to said housing to locate said contacts in said first position when said part of said plunger means projects a given distance beyond said guide cylinder.

4,342,886

BURNER VALVE CONTROL DEVICE, AN ELECTRICAL SWITCH UNIT THEREFOR AND METHODS OF MAKING THE SAME

Roy C. Demi, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 10, 1979, Ser. No. 74,157
Int. Cl.³ H01H *9/06*
U.S. Cl. 200—61.86 **10 Claims**



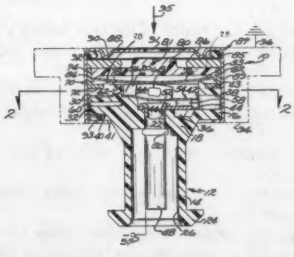
1. In a combination of a burner valve control device and an electrical switch unit carried by said device and being operated by movable actuator means controlled by the selector means of said device, said selector means comprising a control shaft rotatable about an axis thereof, the improvement wherein said switch unit has snap-fit means snap-fitted to said device when the entire said switch unit is moved in a direction substantially transverse to said axis of said control shaft to detachably secure said switch unit to said device.

4,342,887

NORMALLY CLOSED PRESSURE RESPONSIVE SWITCH WITH IMPROVED COMPACT STRUCTURE

Carlton E. Sanford, Riverside, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 15, 1980, Ser. No. 178,275
Int. Cl.³ H01H *35/34*
U.S. Cl. 200—83 P **6 Claims**



1. A normally closed pressure switch device comprising first contact means, second contact means movable between an open circuit position spaced from the first contact means and a closed circuit position engaging the first contact means, a dished disc movable with snap action between original and converted dished configurations to sharply move the second

contact means between said circuit positions, diaphragm means movable in response to applied pressure, and motion transfer means movable with the diaphragm means to move the disc between said disc configurations to open and close the circuit in response to selected changes in the pressure applied to the diaphragm means, characterized in that the second contact means are biased to move away from the first contact means to open the circuit, the disc has first and opposite sides which are respectively convex and concave when the disc is in said original dished configuration, the disc having said first, convex side engaged with the second contact means to hold the second contact means in closed circuit position against said bias when the disc is in said original configuration, annular means of a selected diameter engage a corresponding diameter portion of said first disc side, and the motion transfer means has an annular portion of relatively larger diameter than said selected diameter concentrically engaging a correspondingly larger diameter portion of said opposite disc side to press against the disc in response to movement of the diaphragm means for moving the disc to said inverted disc configuration to open the circuit in response to the application of selected pressure to the diaphragm means.

4,342,888

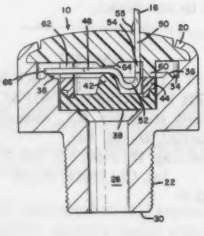
PRESSURE SWITCH WITH CONDUCTIVE HOUSING

Frank P. Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 10, 1980, Ser. No. 214,901

Int. Cl.³ H01H *35/34*

U.S. Cl. 200—83 R **6 Claims**



1. A fluid pressure switch of the type having a sensing end which contacts a fluid medium and a signal end where an electrical conductor is attached comprises:

an electrically conductive body member having a sensing end, a signal end, and a passage therethrough between said ends,

a flexible dielectric diaphragm occluding said passage between said ends,

a dielectric cap fit over said passage at said signal end of said body member,

an electrically conductive contact member having a signal portion and a spring portion, said signal portion being carried by said cap, said spring portion being disposed adjacent to said diaphragm and having a bend where it attaches to said signal portion and a free end disposed for engagement with a contact surface on said body member, said free end being resiliently movable with respect to said contact surface in response to movement of said flexible diaphragm against said spring portion.

4,342,889

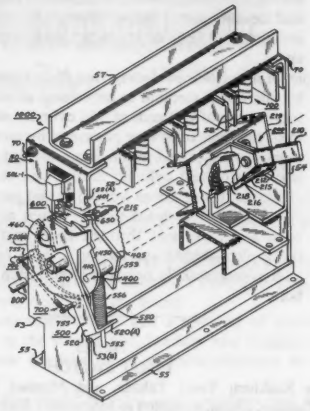
MODULAR VAULT-TYPE LOAD BREAK SWITCH

Clarence L. Welter, Valparaiso, Ind., assignor to G & W Electric Specialty Company, Blue Island, Ill.

Continuation of Ser. No. 797,455, May 16, 1977, Division of Ser. No. 472,969, May 24, 1974. This application Apr. 2, 1979, Ser. No. 26,098

Int. Cl.³ H01H *33/08*

U.S. Cl. 200—144 R **2 Claims**



1. Switch contact means for electrical power distribution load break switches for switching a plurality of phases, comprising:

a plurality of pairs of resilient spring contacts for coupling with each of the phases,

a plurality of blade contacts for electric engagement with each of said pairs of resilient spring contacts,

each of said pairs of resilient spring contacts being mounted on a bifurcated electrically conductive support means with the resilient spring contacts in confronting relation with each other,

one of said blade contacts being received between each of said pairs of resilient spring contacts,

each of said resilient spring contacts being formed into a closed loop so that upon entry of a blade contact between a pair of resilient spring contacts current flow through the closed loop produces a force biasing said resilient spring contacts toward each other and against said blade contact,

said pairs of resilient spring contacts being spaced apart from each other, and

a dielectric barrier disposed between said pairs of resilient spring contacts to suppress arcing therebetween.

4,342,890

GAS-BLAST SWITCH

Rudolf Graf, Obermuhen, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed Feb. 11, 1980, Ser. No. 120,392

Claims priority, application Switzerland, Apr. 24, 1979, 3834/79

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **5 Claims**

1. A gas-blast switch comprising:

a fixed arcing contact element;

a movable arcing contact element cooperating with said fixed arcing contact element;

said arcing contact elements defining between each other an arcing path during the course of a cut-off stroke;

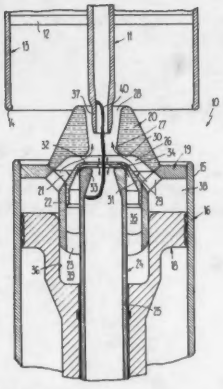
one of the arcing contact elements having a free end;

a blast nozzle operatively associated with said one arcing contact element;

said blast nozzle comprising a blast channel having a throat disposed at a distance from the free end of said one associated arcing contact element and surrounding said arcing path;

said blast nozzle further comprising a blow-in opening arranged between said free end and the throat of the blast channel and opening transversely with respect to said arcing path into said blast channel;

said blow-in opening having a through-flow cross-sectional area which is less than the through-flow cross-sectional area of the blast channel;



means defining a pump compartment containing an extinguishing gas and capable of being pressurized during the cut-off stroke of the gas blast switch;

both the blast channel and the blow-in opening being connected with said pump compartment;

means subdividing the pump compartment into pump chambers which are separate from one another at the latest during the course of the cut-off stroke; and

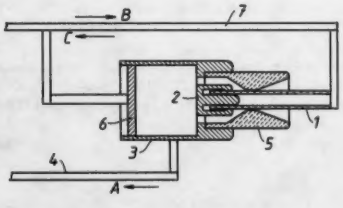
said blast channel flow communicating with one of the pump chambers and the blow-in opening with the other pump chamber.

4,342,891

CIRCUIT BREAKER WITH MEANS FOR PRODUCING A FLOW OF ARC-EXTINGUISHING GAS

Carl E. Sölver, Ludvika, Sweden, assignor to ASEA Aktiebolag, Västeros, Sweden

Filed Jul. 8, 1980, Ser. No. 166,859
Claims priority, application Sweden, Jul. 11, 1979, 7906035
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A **3 Claims**



1. Electric circuit breaker having a gaseous arc-extinguishing medium comprising:

a first and a second contact, said contacts being movable in relation to each other between an engaged and a disengaged position;

a pump means including a piston and a cylinder, said piston being joined to said first contact, and said cylinder being joined to said second contact, said pump means, during a breaking operation, compressing the gas in said cylinder to create a blast of arc-extinguishing gas towards the contact area of the circuit breaker;

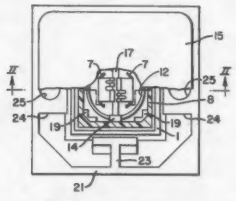
an operating device being connected to said contacts, said operating device including means for moving the contacts in opposite directions away from each other during the first part of a breaking operation, and thereafter moving said first contact and the piston connected thereto back substantially to the initial position, while continuing the movement of said second contact and the cylinder connected thereto in the initial direction to said disengaged position.

4,342,892

KEYSWITCH

Robert D. Ayers, Raleigh, N.C., assignor to Stackpole Components Company, Raleigh, N.C.

Filed Aug. 8, 1980, Ser. No. 176,499
Int. Cl.³ H01H *1/26, 13/52*
U.S. Cl. 200—159 A **2 Claims**



1. A keyswitch comprising a housing having a bottom wall and an open upper end, a plunger having a tubular body extending downwardly in the housing and slidably engaging said housing for movement up and down therein, means limiting upward travel of the plunger to a predetermined elevated position, the lower end of said body being spaced above said bottom wall while the plunger is in said elevated position, said bottom wall being provided with a pair of laterally spaced openings extending substantially vertically therethrough, a pair of opposed spring contact strips mounted in said openings and projecting below said wall to form terminals, said contact strips also converging upwardly inside the plunger and having normally engaging upper ends, a cross member inside the plunger body and supported thereby between the contact strips, and a coil spring inside the plunger below said cross member and encircling the contact strips but spaced therefrom, said spring normally holding the plunger in said elevated position with said cross member spreading the upper ends of the contacts apart, said downward movement of the plunger in said housing disengaging said cross member from the contacts, and said contact strips being substantially identical and each having at least two parallel slits extending downwardly from its upper end to form a plurality of laterally spaced narrow contact fingers at one side of a wider contact finger wide enough to be engaged by the narrow contact fingers of the other contact strip when said cross member is disengaged from the contact strips.

4,342,893

COMPOSITE ELECTRICAL CONTACT AND BONDING MATERIAL

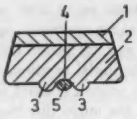
Heinrich Wolf, Hailer, Fed. Rep. of Germany, assignor to WC Heraeus GmbH, Hanau am Main, Fed. Rep. of Germany

Filed Sep. 26, 1979, Ser. No. 78,930

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844888

Int. Cl.³ H01H *1/02*

U.S. Cl. 200—268 11 Claims



1. Composite electrical contact-and-bonding material for bonding to a metallic carrier (11) comprising

an elongated strip of contact material having a first contacting surface and an obverse bonding surface for bonding to said carrier, in which said bonding surface is formed with at least two projections (3) which define a recess (4) therebetween,

and wherein, in accordance with the invention,

the projections comprise at least two parallel elongated ridges or elongated ribs or elongated beads (3) defining a valley (4) between adjacent ridges, ribs or beads, said valley forming the recess;

and wherein a bonding wire (5, 5') is provided, positioned in the valley between the ridges, ribs or beads,

said wire forming a bonding material, being secured to the bottom of the valley, only partly filling said valley, and having a dimension extending therefrom which is at least as high as the ridges or ribs or beads adjacent the valley.

4,342,894

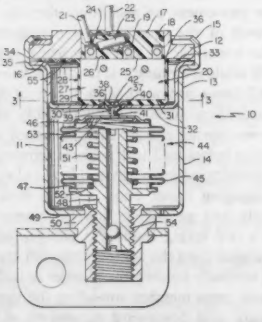
ELECTRICAL SWITCH CONSTRUCTION DIAPHRAGM SEAL THEREFOR AND METHODS OF MAKING THE SAME

Douglas R. Scott, and Frank Payne, both of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 6, 1980, Ser. No. 194,427

Int. Cl.³ H01H *9/04, 35/40*

U.S. Cl. 200—304 46 Claims



1. In an electrical switch construction having a housing means carrying an electrical switch means and an actuator means for actuating an operating plunger means of said electrical switch means, said construction having a flexible diaphragm seal means disposed against said electrical switch means to seal the same to a part of said housing means and define a chamber with said part of said housing means that has said switch means sealed therein, said diaphragm seal means having a portion thereof disposed between said plunger means and said actuator means, the improvement wherein said diaphragm seal means has means for preventing a pressure increase in said chamber that could adversely act across said portion of said diaphragm seal means when there is an increase in the volume of fluid in said chamber, said means of said diaphragm seal means for preventing said pressure increase comprising a readily expandable section of said diaphragm seal means that increases the volume of said chamber as the pressure therein tends to increase and thereby prevents such pressure increase at said portion of said diaphragm seal means, said part of said housing means having a substantially flat wall, said switch means comprising a casing disposed against said flat wall, said diaphragm seal means having a cup-shaped part for covering said switch casing and a substantially flat part for engaging against said flat wall outboard of said switch casing, said expandable section being disposed in said flat part of said diaphragm seal means.

4,342,895

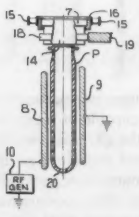
METHOD OF PROCESSING POLYETHYLENE TEREPHTHALATE PREFORMS AND APPARATUS

Suppayan M. Krishnakumar, Nashua, N.H.; John F. E. Pocock, Neu-Isenburg, Fed. Rep. of Germany; Gautam K. Mahajan, Nashua, N.H., and John F. Trembly, Loudonville, N.Y., assignors to The Continental Group, Inc., New York, N.Y.

Filed Nov. 27, 1979, Ser. No. 97,774

Int. Cl.³ H05B *6/54;* B29H *5/26*

U.S. Cl. 219—10.43 12 Claims



1. A method of rapidly heating a tubular preform formed of polyethylene terephthalate substantially uniformly for the full thickness of the wall thereof, said preform being of the type including a neck finish and a body portion terminating in a closed end and said method comprising the steps of supporting a preform formed of polyethylene terephthalate by its neck finish and while rotating the preform about its axis generating between a pair of electrodes a radio frequency field within the range of 13 to 98 megahertz and subjecting the body portion and closed end to said radio frequency field for a period of time of 29 seconds or less to increase the temperature of the preform body and closed end to a thermoforming temperature.

4,342,896

RADIATING MODE STIRRER HEATING SYSTEM

Wesley W. Teich, Wayland, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 954,718, Oct. 24, 1978, abandoned, which is a continuation of Ser. No. 754,064, Dec. 23, 1976, abandoned. This application Aug. 8, 1980, Ser. No. 177,309

Int. Cl.³ H05B *6/72*

U.S. Cl. 219—10.55 F 3 Claims

1. A microwave heating system comprising:

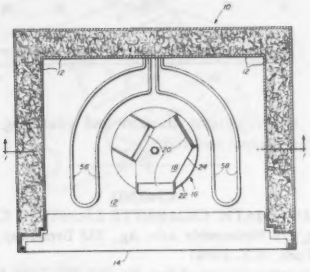
a conductive enclosure;

a source of microwave energy positioned outside said enclosure;

means positioned in said enclosure for radiating a plurality of simultaneous microwave energy beams having different polarization vectors, said radiating means comprising a

primary radiating structure formed by a flat metal plate having at least three elongated slot antennas formed therein, the longitudinal sides of said antennas being substantially perpendicular to imaginary radial lines emminating from a central region of said plate;

said radiating structure further comprising means for providing radial waveguides from said central region to each



of said slots, said plate providing one conductor surface of said waveguides;

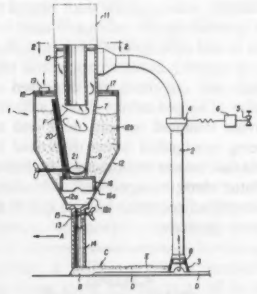
means for coupling microwave energy from said source to said radiating structure, said coupling means comprising a cylindrical conductive member extending through a hole in a wall of said enclosure, said radiating structure being supported by said member; and

means for rotating said member about its cylindrical axis.

4,342,897
RECOVERY TYPE FLUX FEEDING ASSEMBLY

Ryuji Murai, Fujisawa; Toshihiko Watanabe, Kamakura; Yoji Ogata, Fujisawa; Masashi Nagashima, and Mitsurou Soga, both of Kamakura, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Jan. 28, 1980, Ser. No. 116,202
Int. Cl.³ B23K *9/18;* **B04C** *3/00, 9/00;* **B01D** *45/16*
U.S. Cl. 219—73.2 **8 Claims**



1. A recovery type flux feeding assembly comprising:

a virgin flux hopper;

a waste flux hopper operatively associated with said virgin flux hopper;

flux feed means connected to said waste flux hopper for feeding flux to a weld area and positioned above said weld area;

flux return means connected to said waste flux hopper for returning excess flux from said weld area to said waste flux hopper;

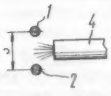
means for selectively permitting flux from said virgin flux hopper to enter said waste flux hopper, said means comprising a virgin flux drop stop positioned between said hoppers and adjacent said flux feed means; and

pressure equalization means interconnecting said virgin flux hopper and said waste flux hopper for equalizing pressure therebetween, whereby a mixture of said virgin flux and said waste flux enters said flux feed means.

4,342,898
METHOD OF SURFACING AND APPARATUS FOR CONTROLLING SAME

Sergei V. Gulakov, ulitsa M. Mazaya, 41, kv. 2; Boris I. Nosovsky, ulitsa Kuprina, 23-a, kv. 30; Leonid K. Leschinsky, prospekt Lenina, 75-b, kv. 60; Xenofont X. Stepnov, ulitsa Dalnevostochnaya, 50, kv. 4, all of Zhdanov Donetskoi oblasti; Petr I. Polukhin, ulitsa Dmitria Ulyanova, 3, kv. 137; Vladimir A. Nikolaev, ulitsa Lavochkina, 46, korpus 2, kv. 228, both of Moscow; Valery G. Bendrik, ulitsa Ilicha, 35, kv. 2; Eduard N. Shebanits, ulitsa Lavitskogo, 3, kv. 30, both of Zhdanov Donetskoi oblasti, and Vladimir P. Polukhin, ulitsa Dmitria Ulyanova, 3, kv. 148, Moscow, all of U.S.S.R.

Filed Sep. 3, 1980, Ser. No. 183,728
Int. Cl.³ B23K *9/04*
U.S. Cl. 219—76.14 **4 Claims**



1. A method of surfacing for building up a surface layer having different-composed portions, comprising the steps of forming the weld pool by melting at least two electrodes disposed in a predetermined spaced relationship relative each other, feeding electrode and filler materials in a predetermined order to the weld pool, with the distance between said electrodes being determined from the following equation

$$s = d\left(1 + k\frac{V_m}{\Sigma Ve + V_m}\right),$$

where s=distance between said electrodes, d=diameter of said electrodes, k=proportionality factor being equal to from 3 to 7, V_m=feed mass velocity of the filler material, and ΣV_e=total feed mass velocity of delivery of the electrodes.

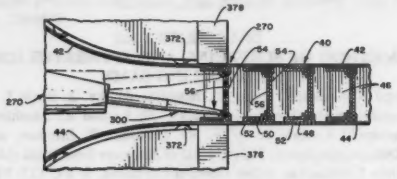
4,342,899
METHOD OF FABRICATING HONEYCOMB CORE STRUCTURE

James R. Campbell, South Laguna, and Roy L. Anspach, Anaheim, both of Calif., assignors to Thomas P. Mahoney, Balboa Island, Calif.

Division of Ser. No. 2,761, Jan. 12, 1979, Pat. No. 4,280,039. This application Feb. 10, 1981, Ser. No. 233,187
Int. Cl.³ B23K *11/32*
U.S. Cl. 219—78.12 **2 Claims**

1. In a method of fabricating a metallic panel having face sheets disposed in spaced relationship to define a cavity therebetween and having a honeycomb core in said cavity having securement portions operatively connected to the inner surfaces of said face sheets by weldments with the securement portions of adjacent core strips disposed in overlying internested relationship at the nodal areas thereof, said core strips having nodal areas engageable with each other, the steps of: disposing the said face sheets in spaced relationship; placing a first core strip in said cavity; urging a plurality of welding electrodes into engagement with said securement portions of said core strip; intermittently and successively impressing a welding potential on said welding electrodes to secure the

securement portions of said core strip in operative engagement with said face sheets; placing a second core strip in said cavity with said nodal areas of said second core strip juxtaposed to corresponding nodal areas of said first core strip to internest the securement portions thereof; successively and intermittently impressing a welding potential on said welding electrodes; and impressing a greater welding potential upon the internested securement portions of said first and second core strips to insure the adequate weldment of said internested securement portions to said face sheets.

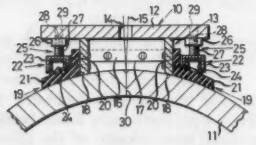


4,342,900

VACUUM SHIELD DEVICE OF AN ELECTRON BEAM WELDING APPARATUS

Shuzo Susei; Shigetomo Matsui, and Hiroyoshi Nagai, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Nov. 13, 1979, Ser. No. 93,943
Int. Cl.[3] B23K *15/00*
U.S. Cl. 219—121 EN 8 Claims



1. A vacuum shield device of an electron beam welding apparatus comprising a main body formed with an aperture for permitting a beam of electrons to pass therethrough and provided with legs spaced apart from each other, a shield member formed of flexible material joined to said main body and adapted to be brought into engagement with the surface of a workpiece, and pressing means contiguous with said shield member for forcing said shield member against the surface of the workpiece.

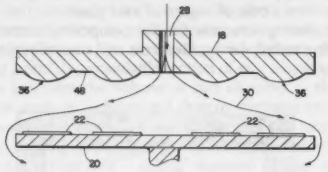
4,342,901

PLASMA ETCHING ELECTRODE

John Zajac, San Jose, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 11, 1980, Ser. No. 176,875
Int. Cl.[3] B23K *9/00*
U.S. Cl. 219—121 PD 9 Claims

1. In a planar plasma etcher having a first electrode, and a second electrode spaced from the first and including means for receiving a plurality of wafers in a predetermined position or positions thereon; the improvement wherein the surface of said first electrode facing said second electrode is formed with a plurality of projections thereon and extending therefrom toward said second electrode.

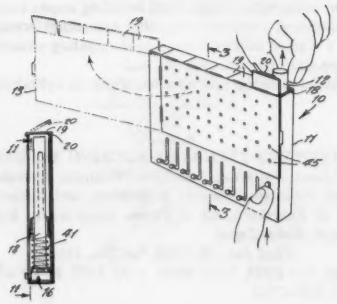


4,342,902

AUTOMATIC CIGARETTE LIGHTING CASE

Wu Ping, c/o Nationwide Adv. Ag., 233 Broadway, Rm. 3615, New York, N.Y. 10007

Continuation-in-part of Ser. No. 906,082, May 15, 1978, abandoned. This application Nov. 3, 1980, Ser. No. 203,064
Int. Cl.[3] F23Q *7/16*
U.S. Cl. 219—268 3 Claims



1. An improved, automatic cigarette lighting case, comprising in combination, a case, a front door hinged on said case for insertion of cigarettes therein when said door is open, a row of transfer tubes in said case, each said tubes receiving one of said cigarettes in an opening along an upper end edge of said case through which said cigarettes are dispensed into respective tubes a plurality of hinged covers closing said dispensing opening, said covers mounted on said door and means for said cigarettes being pre-ignited when dispensed into respective tubes wherein said means comprising a battery powered electrically insulated electric circuit and an electrically insulated sliding igniter coil adjacent the bottom end of each said tubes for igniting said cigarette.

4,342,903

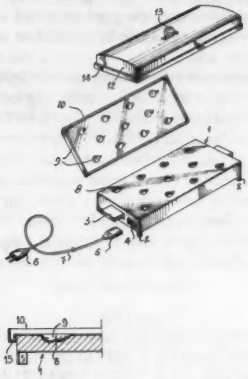
SNAIL REHEATER

Robert Hoogstoel, 2 bis, rue Mercoeur, Paris, France (75011)

Filed Mar. 31, 1980, Ser. No. 135,678
Claims priority, application France, Mar. 29, 1979, 79 07872
Int. Cl.[3] H05B *1/00*
U.S. Cl. 219—386 6 Claims

1. Novel assembly for reheating snails, said assembly comprising at least one snail tray having a plurality of depressions, said depressions being configured and adapted to receive a single snail wherein each of said depressions in said at least one snail tray is formed to have the shape of a snail shell, and a heating apparatus, said heating apparatus comprising a series of heating apparatus depressions corresponding in shape and

position to said depressions of said at least one snail tray on the top surface of said heating apparatus, each of said depressions in the top surface of said heating apparatus being formed to



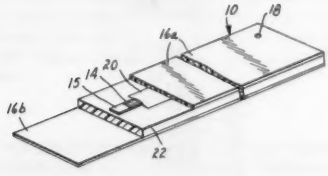
have the shape of a snail shell, and wherein said at least one snail tray is mounted on said heating apparatus whereby said depressions of said at least one snail tray fit within corresponding heating apparatus depressions.

4,342,904

LIGHTWEIGHT FERROMAGNETIC MARKER FOR THE DETECTION OF OBJECTS HAVING MARKERS SECURED THERETO

Lloyd W. Onsager, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 27, 1980, Ser. No. 201,177
Int. Cl.³ G06K *19/06*
U.S. Cl. 235—493 **5 Claims**



1. A lightweight ferromagnetic marker adapted to be secured to an object for detecting the presence of that object within an applied magnetic field varying in intensity as a predetermined frequency, said marker comprising:

a thin strip of ferromagnetic material having a sufficiently low coercivity, a sufficiently high permeability, and a sufficiently large value for the ratio of its length to the square root of its cross-sectional area to afford the generation of a detectable signal whenever said object, bearing said strip, is placed within said field,

cover means for protecting said strip without adding considerable weight to the marker and for affording the attachment of said strip to the object,

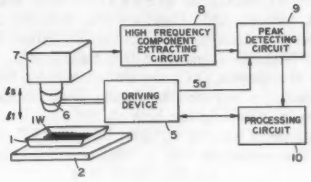
means interposed between said cover means and at least one face of said strip for affording slippage between said strip and said cover means, thereby limiting the transfer to said strip of mechanical stress applied to said cover means, said slippage means comprising at least one sheet of a low-friction release material.

4,342,905

AUTOMATIC FOCUSING DEVICE OF A MICROSCOPE

Norio Fujii, Urawa; Atsushi Kawahara, Tokyo, and Masahiro Sawada, Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 21, 1980, Ser. No. 180,150
Claims priority, application Japan, Aug. 31, 1979, 54/110363; Oct. 27, 1979, 54/138271; Aug. 16, 1980, 55/112305
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—201 **6 Claims**



1. An automatic focusing device of a microscope having an objective lens and a stage on which a specimen is placed, said device comprising:

(a) distance varying means for varying the relative distance between said objective lens and said stage;

(b) distance detecting means for producing a distance output corresponding to said distance;

(c) photoelectric detector means for photoelectrically detecting a high frequency component of the space frequency component of the image of the specimen by said objective lens;

(d) judging means for judging whether or not a predetermined peak smaller than a maximum peak exists in the output of said photoelectric detector means within a predetermined distance range from a first distance output of said distance detecting means, when the output of said photoelectric detector means assumes said maximum peak, and for producing an in-focus output when said predetermined peak exists; and

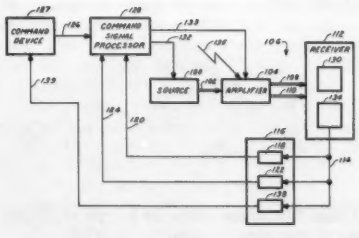
(e) means for determining said relative distance on the basis of said in-focus output.

4,342,906

PULSE WIDTH MODULATED FEEDBACK ARRANGEMENT FOR ILLUMINATION CONTROL

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation of Ser. No. 727,330, Sep. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,022. This application Feb. 2, 1978, Ser. No. 874,446
Int. Cl.³ G01J *1/32*
U.S. Cl. 250—205 **35 Claims**



1. An illumination control system comprising:

an illumination source for generating source illumination;

an illumination control device for generating controlled illumination by selectively transmitting source illumination in response to a control signal;

sensor means for generating a sensor signal in response to the controlled illumination from said illumination control device; and

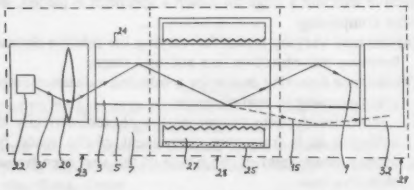
a stored program digital computer for generating the control signal to said illumination control device in response to the sensor signal under control of a stored program.

4,342,907

OPTICAL SENSING APPARATUS AND METHOD

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20034; Theodore A. Litovitz, 904 Devere Dr., Silver Spring, Md. 20903; Nicholas Lagakos, Silver Spring, Md.; Robert K. Mohr, Washington, D.C., and Robert Meister, Silver Spring, Md., assignors to Pedro B. Macedo, Bethesda and Theodore A. Litovitz, Silver Spring, both of, Md.

Continuation of Ser. No. 859,848, Dec. 12, 1977, abandoned.
This application Feb. 1, 1980, Ser. No. 117,637
Int. Cl.[3] G02B 5/14
U.S. Cl. 250—227 54 Claims



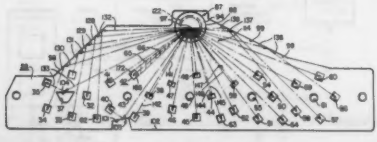
1. A sensor comprising an optical waveguide having means for transmitting light in at least two groups of modes denoted A and B, an optical light source means for injecting light into said waveguide so that light transmitted at least initially along said waveguide will be substantially in one of said groups, deformer means responsive to an external stress for deforming a region of said waveguide with such deformation being effective to change the character of the transmission of at least a portion of the light in the vicinity of the deformation from said one group to the said other group of modes, the change being approximately a linear function of the change in the external stress, and an optical detector having means to detect a change in the light in said other group only and thereby monitor said external stress.

4,342,908

LIGHT DISTRIBUTION SYSTEM FOR OPTICAL ENCODERS

Tom Henningsen, Monroeville; Forrest E. Coyle, Penn Hills, both of Pa., and Roger D. Moates, Raleigh, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 28, 1980, Ser. No. 182,300
Int. Cl.[3] G02B 5/14
U.S. Cl. 250—227 29 Claims



1. A light distribution system for an optical encoder having an array of photosensitive sensors, comprising:

a transparent light guide plate having front and back parallel surfaces;

a light input coupler including an incident radiation distributing area formed within said light guide plate for receiving a predetermined beam of input incident radiations, said distributing area spreading the input incident radiations into a distributed beam having plural beam segments each being directed in said light guide plate substantially wholly parallel to a single predetermined radiation path and further being substantially parallel to said front and back surfaces; and

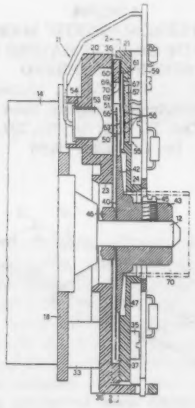
a predetermined pattern of plural discrete light output couplers each formed by an output reflecting surface recessed into one of said front and back surfaces, each of the output reflecting surfaces being in optical alignment with only a single one of said predetermined radiation paths to intercept a separate one of said beam segments, said reflecting surfaces having different surface areas corresponding to the different lengths of the predetermined radiation paths from said distributing area to produce output beams for uniformly illuminating each of said sensors of said array.

4,342,909

OPTICAL TRANSDUCER FOR DETECTING THE ANGULAR POSITION OF A ROTATING MEMBER WITH RESPECT TO A FIXED STRUCTURE

Andrea Accattino, Salerano, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Italy

Filed Apr. 14, 1980, Ser. No. 140,146
Claims priority, application Italy, Sep. 27, 1979, 68875 A/79
Int. Cl.[3] G01D 5/34
U.S. Cl. 250—231 SE 10 Claims



1. An optical transducer for detecting the angular position of a rotating member with respect to a fixed structure, comprising a disc which is connected to said rotating member and which is provided with a plurality of radial openings disposed along an anular region of said disc and having a fixed angular dimension and pitch, light emitting means and detecting means for detecting the passage of the light through said radial openings, a first fixed mask interposed between said emitting means and said disc and a second fixed mask interposed between said disc and said detecting means, wherein said first and second masks comprise a plurality of adjacent openings having a predetermined angle dimension and pitch associated with the angular dimension and pitch of the radial openings of the disc, wherein each opening of the first mask is aligned with an associated opening of the second mask and wherein the openings of the first mask and the associated openings of the second mask are aligned with said emitting means and with said detecting means thereby to collect the light into a plurality of parallel beams

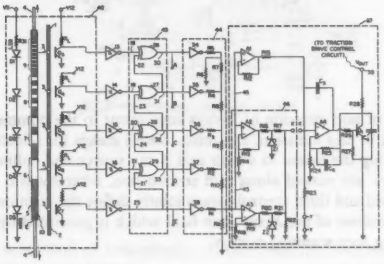
which crosses a section of the annular region of the disc and wherein the beams are substantially perpendicular to said disc.

4,342,910

OPTOELECTRONIC ABSOLUTE POSITION ENCODER WITH AN IN-LINE GRAY CODE CONTROLLING VEHICLE ACCELERATION

George F. Pfeifer; George R. Koonce, both of Liverpool, and Jack E. Phillips, Fayetteville, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 5, 1980, Ser. No. 184,213
Int. Cl.³ H01J 3/14
U.S. Cl. 250—237 G 12 Claims



1. An optoelectronic position encoder for providing a signal indicative of the absolute position of an encoder slide, comprising:

an optical interrupter assembly, including a plurality of paths of optical wavelength radiation passing therethrough, and a plurality of photodetectors each photodetector being in optical communication with a separate one of said paths of optical wavelength radiation, respectively; and

an encoder slide positioned for linear movement through said interrupter, said slide having optically transmissive windows arranged in a Gray code pattern, said windows being disposed in tandem and colinear with the line of movement of said slide so that in response to said movement said photodetectors detect said radiation transmitted through said windows and produce a Gray coded electronic signal indicative of the absolute position of said slide.

4,342,911

FOCUSED NUCLEAR INTERFACE SURVEY INSTRUMENT AND METHOD OF DETERMINING DENSITY CHANGES IN MINING AND STORAGE WELLS

Lewis L. French, 11250 Concho La., Houston, Tex. 77072

Filed Dec. 28, 1979, Ser. No. 107,782
Int. Cl.³ G01V 5/00
U.S. Cl. 250—258 20 Claims

1. An instrument for determining a fluid interface in an underground well, comprising:

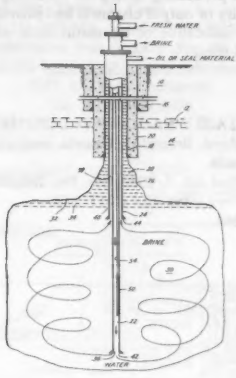
a housing;

radiation means for emitting radiation into the well;

a radiation collimator concentrically disposed on the lower end of said housing, said radiation means being eccentrically housed within said radiation collimator adjacent to the periphery thereof for directing the emission of radiation by said radiation means through restricted vertical and horizontal angles of radiation;

detection means for detecting any backscattered radiation from the fluid;

a cylindrical detection collimator mounted within said housing and having said detection means housed therein, said detection collimator having a window therein for exposing said detection means to the backscattered radiation, said window having an equi-radii cylindric surface area of exposure;



means for establishing the area of backscattering from the fluid; and

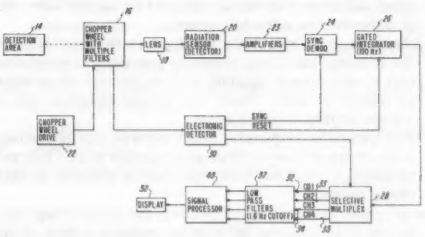
recording means for measuring the backscattered radiation.

4,342,912

APPARATUS FOR DETECTING AIR DISTURBANCES CREATED BY LOW LEVEL WIND SHEAR

Hugh P. Adamson, Golden, Colo., assignor to University Patents, Inc., Norwalk, Conn.

Filed Aug. 4, 1980, Ser. No. 175,115
Int. Cl.³ G01J 1/00
U.S. Cl. 250—339 28 Claims



1. An apparatus for detecting disturbances in air created by low level wind shear, said apparatus comprising:

signal developing means for receiving optical indications relating to disturbances in air created by low level wind shear and providing electronic signal outputs indicative thereof, said signal developing means including filter varying means for repeatedly successively injecting predetermined different optical filters into the path of said received optical indications so that said electronic signal outputs are indicative of optical indications received through different ones of said filters;

first signal processing means connected with said signal developing means to receive said electronic signal outputs therefrom and responsive thereto providing processed output signals indicative of said electronic signal outputs received from said signal developing means;

a plurality of output channels such of which includes electronic filter means;

multiplexing means connected with said first signal processing means to receive said processed signal outputs therefrom and connected with said filter varying means

whereby said processed signal outputs are sequentially directed to each channel of said plurality of output channels; and

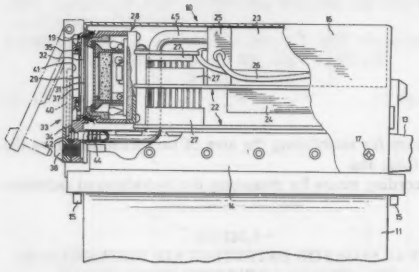
second signal processing means for receiving the outputs of said plurality of output channels and providing therefrom an output indicative of air disturbance created by low level wind shear.

4,342,913

PORTABLE RADIATION DOSIMETER

Robert A. Shepherd, Brampton, Canada, assignor to Selco Inc., Toronto, Canada

Filed Jul. 7, 1980, Ser. No. 166,063
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—364 **8 Claims**



1. A portable radiation dosimeter for measuring accumulative exposure to radioactive particles comprising, as a unitary assembly;

a housing providing an inlet for ambient air,

means defining a chamber within the housing adjacent a front wall thereof to receive ambient air via said inlet, the chamber having a frontal opening,

a clamp assembly releasably mounted on the front wall of the housing, the clamp assembly providing a peripheral seal to said frontal opening and an internal air passage positioned to interconnect said frontal opening with a second air inlet to the housing,

a filter located in cooperative relation to said frontal opening to intercept air flowing from said chamber to said internal air passage, the filter being clamped in position by said clamp assembly,

an air pump mounted in the housing, the pump being connected to said second air inlet for inducing a flow of air from said chamber and through said air passage via the filter,

a detection unit incorporating a radiation detector mounted within the housing, the detection unit having a window positioned in juxtaposition to the filter,

and

electronic means connected to said radiation detector for processing and counting pulses generated by the detection of radioactive particles from decay products entrapped by the filter.

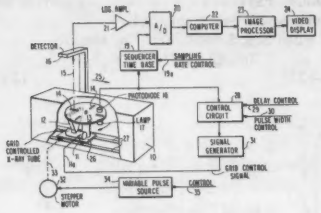
4,342,914

FLYING SPOT SCANNER HAVING ARBITRARILY SHAPED FIELD SIZE

Paul J. Bjorkholm, Sharon, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.

Filed Sep. 29, 1980, Ser. No. 191,900
Int. Cl.³ H04N *5/32*
U.S. Cl. 378—99 **16 Claims**

9. A flying spot X-ray scanning system comprising an X-ray source adapted to emit X-rays, collimator means positioned to intercept said emitted X-rays and operative to produce a pencil beam of X-rays which repetitively scans along a first line, means for moving said X-ray source and said collimator means along a second line transverse to said first line during the scanning of said pencil beam, first control means for selectively varying the time at which said X-ray source commences its emission of X-rays relative to the beginning of each of said scans, second control means for selectively varying the duration of said emission of X-rays subsequent to the commencement of said emission, and third control means for selectively varying the extent to which said X-ray source and collimator means are moved along said second line, whereby said first, second and third control means jointly define the position and dimensions of the X-ray scan field which is generated by said flying spot scanning system.

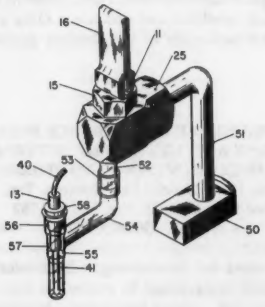


4,342,915

APPARATUS FOR PREVENTING BACTERIAL PASSAGE INTO STERILE FLUID SYSTEMS

Narbik A. Karamian, 7609 Exeter Rd., Bethesda, Md. 20014

Continuation-in-part of Ser. No. 926,664, Jul. 21, 1978, Pat. No. 4,276,256, which is a continuation-in-part of Ser. No. 737,740, Nov. 1, 1976, abandoned. This application Feb. 11, 1981, Ser. No. 233,322
Int. Cl.³ A61L *2/10*
U.S. Cl. 250—436 **3 Claims**



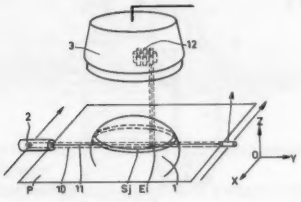
1. An apparatus for preventing bacterial passage into a sterile fluid which comprises in combination a source of sterile fluid, a conduit attached to said source of sterile fluid, a fluid delivery faucet including a shut-off valve means attached to said conduit, said faucet having a delivery spout attached thereto and downstream therefrom, including a substantially unrestricted annular sterile fluid flow path therein, said delivery spout having an ultraviolet light positioned in the center thereof, means for periodically energizing said ultraviolet light so that the annular flow path defined by the exterior of the ultraviolet light and the interior of the delivery spout is irradiated with ultraviolet light to assure bacterial sterility.

4,342,916

METHOD OF AND APPARATUS FOR TOMOGRAPHIC EXAMINATION OF STRUCTURES BY X-RAY OR GAMMA RAY SCANNING

Michel Jatteau, Lesigny; Vincent Chalmeton, Yerres, and Joseph Pauvert, Ris-Orangis, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,761
Claims priority, application France, Nov. 27, 1978, 78 33430
Int. Cl.³ G01N *21/00*
U.S. Cl. 378—4 11 Claims



1. A method of tomographic examination for determining electron density by X-ray or gamma ray scanning of at least a part of a body to enable display of images of nominal slices, in which said part of the body is subdivided into volume elements defined by a nominal matrix in each slice, comprising the following steps:

A. scanning a first slice in a first direction with a first collimated beam of penetrating radiation of known intensity which extends within the slice,

detecting radiation within the beam which has passed through the slice to obtain a first set of measuring data n_1,

simultaneously detecting Compton-scattered radiation which leaves the body in a direction perpendicular to the slice from each element in the slice, to obtain a second set of measuring data, n_2;

B. scanning the first slice with a second substantially identical collimated beam of penetrating radiation in a direction which is opposite the first direction,

detecting at least Compton-scattered radiation from each element in the slice which leaves the body in the direction perpendicular to the slice from each element in the slice, to obtain a third set of measuring data, n_3;

C. storing the first, second and third sets of measuring data;

D. calculating an electron density value in each element in the first slice on the basis of at least the first, second and third sets of measuring data;

E. storing the electron density values in each element in the slice;

F. scanning a further slice, adjacent to the slice most recently scanned, and detecting radiation per steps A and B to obtain at least further first, second and third sets of measuring data for the further slice;

G. storing the further sets of measuring data;

H. determining an electron density value in each element in the further slice on the basis of at least the further first, second and third sets of measuring data and the electron density values previously stored;

I. storing the electron density values in each element in the further slice;

J. repeating steps F, G, H, and I for a slice adjacent the slice most recently scanned until all slices within the part of the body to be examined have been scanned; and

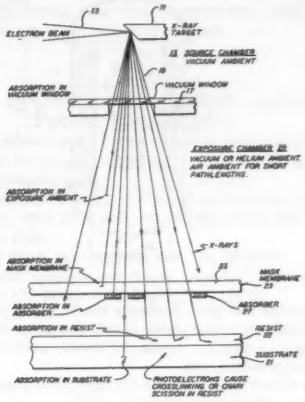
K. displaying the electron density values in elements of one or more of the slices.

4,342,917

X-RAY LITHOGRAPHY APPARATUS AND METHOD OF USE

William D. Buckley, Easton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 869,541, Jan. 16, 1978, Pat. No. 4,215,192.
This application Nov. 9, 1979, Ser. No. 92,875
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.
Int. Cl.³ B05D *3/06*
U.S. Cl. 378—34 16 Claims



1. Apparatus for performing x-ray lithography comprising:

(a) means for coating the substrate on which the lithography is to be carried out with a resist;

(b) means for disposing an x-ray apparatus having a target means capable of generating M-line x-ray radiation having a wavelength in the range of between about 4 and about 14 angstroms so as to generate radiation which will impinge on and expose said coated substrate;

(c) means for operating said x-ray source so as to generate the M-line radiation;

(d) means for disposing a mask between said source and said substrate; and

(e) means for exposing said substrate to said radiation.

4,342,918

ION-NITRIDING APPARATUS

Akio Tanaka, Ono; Mizuo Edamura, Kobe; Satoshi Furuitsu, Kakogawa, and Satoru Kunise, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Division of Ser. No. 4,613, Jan. 18, 1979, which is a continuation of Ser. No. 751,328, Dec. 16, 1976. This application Aug. 27, 1980, Ser. No. 181,844
Claims priority, application Japan, Dec. 29, 1975, 50-158107; Jan. 14, 1976, 51-3471; Feb. 16, 1976, 51-16379; Mar. 1, 1976, 51-22382; Mar. 1, 1976, 51-22383; Mar. 19, 1976, 51-30381; Jun. 1, 1976, 51-64370; Jun. 1, 1976, 51-64371; Jun. 1, 1976, 51-71326
The portion of the term of this patent subsequent to Dec. 18, 1996, has been disclaimed.
Int. Cl.³ C21D *1/09, 1/74*
U.S. Cl. 422—186.04 8 Claims

1. An ion-nitriding apparatus comprising:

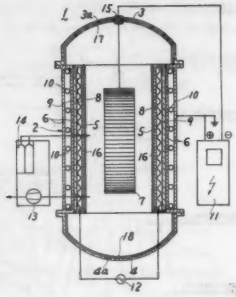
(a) a vacuum reacting furnace having a furnace body of double walled construction, with an outer wall body and an inner wall body, and a lid for inserting and removing a workpiece for treatment;

(b) a heating element which generates heat electrically and is disposed between said outer wall body and said inner wall body in said vacuum reacting furnace, said heating ele-

ment being electrically screened from said workpiece by said inner wall body;

(c) glow discharge means to generate glow discharge between said inner wall body as anode and said workpiece inserted in said vacuum reacting furnace as cathode, the anode side of said glow discharge means being grounded;

(d) a power source device having a positive terminal and a negative terminal for discharge to flow a direct current



through said glow discharge means, said positive terminal connected to said anode of said discharge means and said negative terminal connected to said cathode of said discharge means; and

(e) a power source device for heating to impress a voltage upon said heating element;

wherein the inner circumferential surface of the inner wall body of the furnace body is blackened.

4,342,919

FIBER OPTICAL MEASURING DEVICE

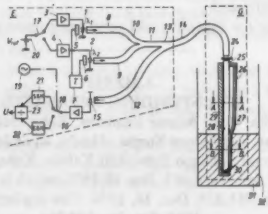
Torgny Brogardh, Västeros, Sweden, assignor to ASEA Aktiebolag, Västeros, Sweden

Filed Apr. 7, 1980, Ser. No. 138,112

Claims priority, application Sweden, Apr. 10, 1979, 7903175

Int. Cl.³ G01N *15/06*

U.S. Cl. 250—577 **16 Claims**



1. A transducer for a fiber optical measuring device for the measurement of physical parameters of a medium, comprising:

at least one light guide for receiving light signals and transmitting output light signals representative of the parameter of said medium being measured and adapted to be partially immersed into said medium;

a sheath surrounding said light guide and including at least one transparent region thereof;

said light guide further including a core having a higher refractive index than said sheath;

said core transmitting light from said at least one transparent region at the immersed portion of said light guide to produce said output light signals; and

light transmission varying means spaced from said light guide and being brought into optical contact with said core by immersion of said light guide into said medium such that the light transmitted from said at least one transparent region is altered by said medium.

4,342,920

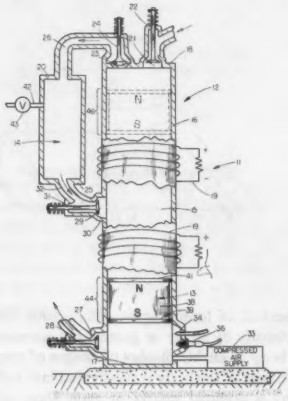
POWER PLANT AND PROCESS UTILIZING GRAVITATIONAL FORCE

Donald C. Bucknam, 2124 S. 110th St., Omaha, Nebr. 68144

Filed Oct. 15, 1980, Ser. No. 197,314

Int. Cl.³ F02B *71/04*; F02D *39/10*; F03G *7/02*

U.S. Cl. 290—1 R **21 Claims**



1. A process for converting gas expanding energy sources into useful other forms of energy, such as inducing an alternating current in a coil, comprising the steps of:

holding a piston means forming a magnetic field at a starting position near a lower end of a cylinder means, also having an upper end, with a load-connected electrical conductor coil means surrounding it intermediate said ends thereof;

lifting said piston means to an apex position near an upper end of said cylinder means thereby opening a spring-biased valve mounted in a first outlet port in said upper end in order to transfer the column of air above the piston means through a tube into a reservoir means;

permitting said piston means to initiate a repeating cycle by free falling within said cylinder means thereby allowing said spring-biased valve in the first outlet port to close, opening a spring-biased valve mounted in a first inlet port in said upper end in order to admit a charge of fresh air and opening a spring-biased mechanically operated exhaust valve mounted in a second outlet port in said lower end;

closing the valve in said second outlet port at the bottom of the cylinder when the piston means has fallen far enough to enable it to compress as much fresh air beneath it to allow it to reach said starting point;

injecting fuel into the air in the cylinder means beneath said piston means starting position prior to its reaching said starting position;

igniting the fuel and air mixture at approximately the instant when said piston means has reached said starting position thereby forcing said piston means towards the upper end, again opening said first outlet port for transferring the column of air above and ahead of said piston means into said reservoir;

opening a valve mounted in a second inlet port, intermediate the lower and upper ends of said cylinder means, and connected by pipe to a lower end of said reservoir means, as the piston means passes upwardly by, in order that compressed air in the reservoir will enter the cylinder means behind the piston between the piston means and the

lower end of said cylinder means and expel the contaminated gases through the second outlet port; and

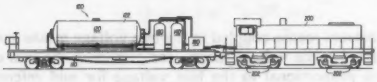
closing said second inlet port when the piston means has again reached a point near the upper end of the cylinder means and is in position to again free-fall for the next repetition of the cycle.

4,342,921

LOCOMOTIVE ENERGY RECOVERY SYSTEM

Thomas J. Williams, 1860 N. El Molino, Pasadena, Calif. 91104

Filed May 11, 1981, Ser. No. 262,434
Int. Cl.³ B60L *1/02*
U.S. Cl. 290—2 9 Claims



1. An energy recovery system for a locomotive mounted on wheels, comprising:

an internal combustion engine located on a wheeled locomotive which serves as the primary source of power for said locomotive;

an electric dynamo which is mechanically powered by said internal combustion engine;

an electric motor which is electrically powered by said dynamo, which electric motor serves to propel the locomotive by rotating at least one of the wheels of said locomotive, and which electric motor operates as a dynamo to produce electricity during dynamic braking of said locomotive; and

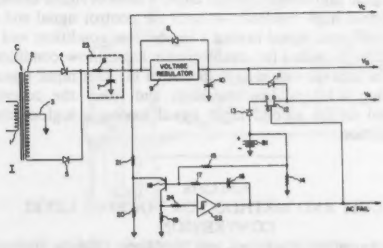
energy recovery tank means containing a heat storage fluid for capturing and storing waste heat energy generated by said internal combustion engine and electrical energy generated by said electric motor for use at a remote location at a later time.

4,342,922

AC FAIL-DETECT AND BATTERY SWITCHOVER CIRCUIT FOR MULTI-BUS POWER SUPPLY

Donald V. DiMassimo, and John B. May, both of Liverpool, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 5, 1981, Ser. No. 231,697
Int. Cl.³ H02J *9/06*
U.S. Cl. 307—66 8 Claims



1. A circuit for detecting an AC power failure, including means for providing a first DC voltage, comprising:

a source of reference voltage;

a voltage divider providing a second DC voltage proportional to said first DC voltage;

a voltage comparator-switch circuit for comparing said second DC voltage with the reference voltage, said comparator producing an output signal when said second DC voltage exceeds the reference voltage by a predetermined amount;

a Schmitt trigger-inverter circuit coupled to the output of said comparator and providing an AC fail signal indicating an AC power failure when said output signal falls below a second predetermined level; and

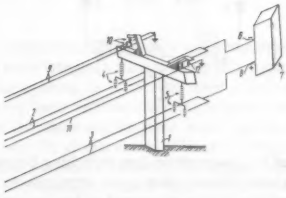
circuit means coupled to the output of said Schmitt trigger-inverter circuit, to said comparator-switch circuit and to said source of reference voltage for rapidly biasing said comparator-switch means into nonconduction when said Schmitt trigger-inverter produces the AC fail signal, and for rapidly biasing said comparator-switch means into conduction when AC power is restored.

4,342,923

D.C. POWER TRANSMISSION LINE WITH LIGHTNING PROTECTION WIRES

Vyacheslav K. Ishkin, ulitsa Paustovskogo, 8, korpus 3, kv. 161, and Veniamin G. Kagan, ulitsa Shukhova, 16, korpus 5, kv. 6, both of Moscow, U.S.S.R.

PCT No. PCT/SU80/00010, § 371 Date Aug. 31, 1981, § 102(e) Date Aug. 31, 1981, PCT Pub. No. WO81/02226, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 30, 1980, Ser. No. 297,697
Claims priority, application U.S.S.R., Jan. 12, 1978, 2570670
Int. Cl.³ H02J *1/02;* H02G *7/22, 13/00*
U.S. Cl. 307—147 1 Claim



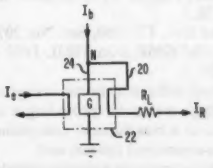
1. A d.c. power transmission line comprising line conductors connected, respectively, to poles of a d.c. power supply and two wire-type systems providing for lightning protection of the line conductors and located above the latter, characterized in that one of said wire-type systems is located above a first line conductor (2) connected to the negative pole (6) of said d.c. power supply (7) and comprises at least two conductors (9) arranged at a certain distance from each other, a second one of said wire-type systems having a single wire (11) being located above a second line conductor (3) connected to the positive pole (8) of said d.c. power supply (7).

4,342,924

NONHYSTERETIC JOSEPHSON JUNCTION CIRCUITS WITH FEEDBACK

Richard E. Howard, and Lawrence D. Jackel, both of Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 29, 1980, Ser. No. 173,388
Int. Cl.³ H03K *17/92*
U.S. Cl. 307—245 8 Claims



1. A superconductive circuit comprising

a circuit node (N) to which bias current (I_b) can be applied,
an output branch (20) connected to said node,
a second branch (24) connected to said node, said second branch including a nonhysteretic Josephson junction gate (G) having a zero-voltage, low impedance first state below a critical current I_J and finite voltage, higher impedance second state above I_J, and
control means (I_c) for switching said gate between its first state in which said bias current flows primarily through said gate and said second state in which said bias current is diverted to said output branch, characterized by
means (20, 22) for rendering the state of said gate responsive to the flow of output current in said output branch.

4,342,925

CIRCUIT ARRANGEMENT FOR INTERRUPTION-FREE VOLTAGE SWITCHING

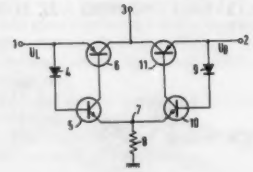
Ludwig Schick, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,572

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929515

Int. Cl.³ H03K *17/00*

U.S. Cl. 307—270 **2 Claims**



1. In a circuit for interruption-free switching between feed voltages, the circuit having two input terminals to each of which a feed voltage may be connected and an output terminal to which the higher of the two feed voltages is to be connected, the improvement comprising:
a driving transistor for each input terminal, each driving transistor having a base, an emitter, and a collector, the base of each transistor being coupled to one input terminal,
a resistor having a terminal to which the emitters of both driving transistors are connected and a terminal adapted to be connected to a reference potential,
a complementary switching transistor for each driving transistor, each switching transistor having a base, an emitter, and a collector, the base of each switching transistor being connected to the collector of the associated driving transistor, the emitter of each switching transistor being connected to the input terminal to which the base of the associated driving transistor is connected, and
an output terminal to which the collectors of both switching transistors are connected.

4,342,926

BIAS CURRENT REFERENCE CIRCUIT

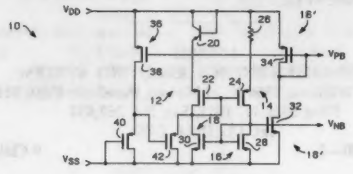
Roger A. Whatley, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 17, 1980, Ser. No. 207,532

Int. Cl.³ G05F *3/16*; H03L *1/00, 5/00*

U.S. Cl. 307—297 **13 Claims**

1. A bias current reference circuit comprising:
reference voltage means for providing a reference voltage proportional to a bias current, comprising:
a first diode-connected device; and
a second diode-connected device coupled in series with said first diode-connected device;
reference current means coupled to the reference voltage means, for providing a reference current proportional to the reference voltage;
bias voltage means coupled to the reference current means, for providing a bias voltage proportional to the reference current; and



bias current means coupled to the bias voltage means and to the reference voltage means, for providing the bias current proportional to the bias voltage for said reference voltage means.

4,342,927

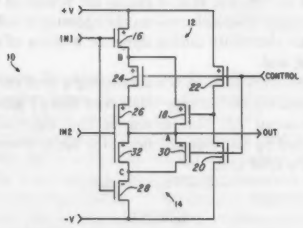
CMOS SWITCHING CIRCUIT

Charles G. Hull, Rosenberg, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 24, 1980, Ser. No. 133,239

Int. Cl.³ H03K *19/08*

U.S. Cl. 307—452 **6 Claims**



1. A switching circuit comprising:
storage means for maintaining a logical condition established therein, and for providing an output signal indicative of the maintained logical condition;
first logic means for establishing a logical high condition in the storage means in response to a first input signal having a logical high condition and either a control signal having a logical high condition or both the control signal and a second input signal having a logical low condition; and
second logic means for establishing a logical low condition in the storage means in response to the first input signal having a logical low condition and either the control signal or the second input signal having a logical low condition.

4,342,928

CIRCUIT AND METHOD FOR VOLTAGE LEVEL CONVERSION

Jörg Gschwendtner, Esslingen, and Wolfdieter Löhlein, Herrenberg, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,206

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1979, 2929383

Int. Cl.³ H03K *6/02, 19/017*

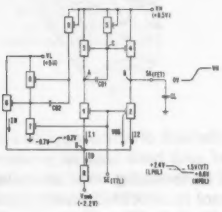
U.S. Cl. 307—475 **8 Claims**

1. A field-effect transistor input buffer circuit for converting low level binary logic input signals applied to an input node to high level binary logic output signals delivered to an output

node, the input signals having predefined up and down logic levels, each of the up and down levels being defined over a range of voltages, comprising:

a source bias node;

a first field-effect transistor having gate, drain and source electrodes, the gate electrode being connected to the input node, the drain electrode being connected to the output node and the source electrode being connected to said source bias node, and



source bias control means responsive to signals on the input node for changing the potential on said source bias node to increase the gate-to-source voltage of said first transistor to a voltage greater than the voltage of an up level input signal in response to an up level input signal and to decrease the gate-to-source voltage of said first transistor to a voltage less than the voltage of a down level input signal in response to a down level input signal.

4,342,929

ELECTRIC MOTOR WHEREIN LOW TEMPERATURE POLYMERIC HOUSING SUPPORTS HEAT DISSIPATING PORTIONS THROUGH HEAT RESISTING POLYMERIC BRIDGING MEMBER

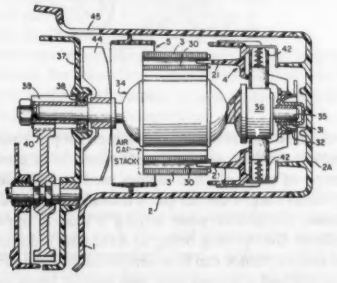
David Horne, Staines, England, assignor to Black & Decker Inc., Newark, Del.

Filed Jul. 10, 1980, Ser. No. 168,378

Claims priority, application United Kingdom, Jul. 13, 1979, 7924527

Int. Cl.³ H02K *1/04*

U.S. Cl. 310—43 **11 Claims**



2. A portable electric power tool, comprising:

an electric motor to drive said tool, said electric motor emitting heat in operation and thereby attaining an elevated running temperature;

a polymeric housing encasing said electric motor, said polymeric housing supporting said electric motor mounted therewithin;

the material of said polymeric housing inherently becoming softened if subjected to said elevated running temperature;

said electric motor being supported within said polymeric housing by spacing members axially spaced apart and extending between the said electric motor and said polymeric housing;

said spacing members being made of a polymeric material which is inherently resistant to said elevated running temperature; and

said spacing members being of low thermal conductivity to hinder conduction of heat from said electric motor to said polymeric housing.

4,342,930

STEP-BY-STEP MINIATURE MOTOR FOR WATCH MOVEMENT

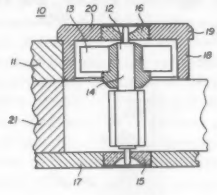
Michel H. Pellaton, Besancon, France, assignor to France Ebauches S.A., Valdahon, France

Filed Sep. 8, 1980, Ser. No. 184,801

Claims priority, application France, Sep. 6, 1979, 79 22724

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—49 R **2 Claims**



1. A miniature stepping motor for watch movement, consisting of a rotor integral with a rotating axle, a stator pierced with a circular opening in which the rotor is housed, and a stator reinforcing band and rotor bearing support member, disposed between the stator and the rotor, made up of a tubular element at least partially closed at one of its ends, composed of a lateral cylindrical wall and a flat base, this element being pressed into the circular opening concentrically within the stator, the base of the said tubular element having a central opening disposed to house a bearing for the rotor axle.

4,342,931

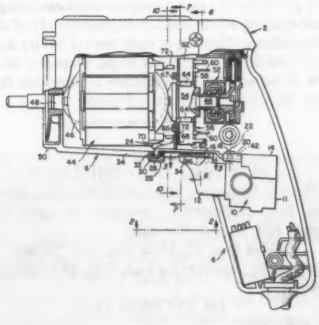
BRUSH-SHIFTING AND TRIGGER-SWITCH ARRANGEMENTS FOR A PORTABLE TOOL

Horst Grossmann, Huenfelden, and Alfred Bausch, Waldbrunn, both of Fed. Rep. of Germany, assignors to Black & Decker Inc., Newark, Del.

Filed Jan. 29, 1981, Ser. No. 229,441

Int. Cl.³ B23B *45/02*; H02K *7/14*

U.S. Cl. 310—50 **24 Claims**



1. A portable tool having an electric motor, comprising:

an armature;

a rotatable brush-board having brushes mounted thereon;

a reversing switch for determining the direction of rotation of the armature; and

a pivoted lever mechanically coupling the brush-board to the reversing switch whereby pivotal movement of the lever angularly shifts the brushes about the axis of rotation of the armature and simultaneously actuates the reversing switch to determine the direction of rotation of the armature.

4,342,932

ROTOR OF CRYOGENIC ELECTRICAL MACHINE

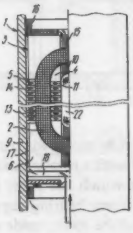
Igor A. Glebov, prospekt Smirnova, 24, Korpus 3, Kv. 52; Yanush B. Danilevich, ulitsa Tipanova, 29, Kv. 681; Sergeia A. Ivanov, ulitsa Siezzhinskaya, 24, Kv. 12; Anatoly A. Karymov, Sredny prospekt, 49, kv. 5; Galina A. Kotlyarova, prospekt Shaumiana, 58, kv. 22; Vladimir A. Sapozhnikov, prospekt Kultury, 11, korpus 1, kv. 145, and Valentin N. Shakhtarin, prospekt Metallistov, 14, kv. 6, all of Leningrad, U.S.S.R.

Filed Feb. 13, 1980, Ser. No. 121,262

Claims priority, application U.S.S.R., Feb. 15, 1979, 2725190

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 **3 Claims**



1. A rotor of a cryogenic machine of the type which includes a plurality of flat superconducting field windings assembled into a cylindrical rotor, said cylindrical rotor being surrounded by a bandage, comprising:

a first plurality of passages inside said bandage;

means for feeding a cryogenic cooling liquid into said first plurality of passages;

a central cavity on the axis of said rotor inside said field windings;

a second plurality of radial passages effective for communicating said cryogenic cooling liquid in unidirectional inward flow from said first plurality of passages to said central cavity, said cryogenic cooling liquid in said second plurality of radial passages contacting and absorbing heat from said field windings during said unidirectional flow therepast; and

a third plurality of axial passages communicating said cryogenic cooling liquid and vapor phase evolved therefrom in unidirectional flow from said central cavity to axial locations outside said field windings, whereby unidirectional flow of liquid, and vapor phase is provided through said rotor without counter flow thereof.

4,342,933

ELECTRICAL COMMUTATOR

Heinz Gerlach, Ehningen, and Lothar Woerner, Stuttgart, both of Fed. Rep. of Germany, assignors to Kautt & Bux KG, Stuttgart, Fed. Rep. of Germany

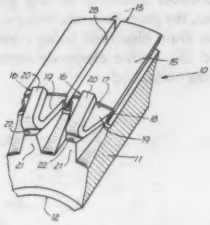
Filed Dec. 27, 1976, Ser. No. 754,682

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1976, 2601845

Int. Cl.³ H02K *13/04*

U.S. Cl. 310—234 **11 Claims**

1. A collector for electrical machines comprising a plurality of lamella segments, each segment having anchoring elements and being connected to a cylindrical insulating body by means of said anchoring elements, each of said lamella segments having at one end thereof a hook base from a free end of which a hook protrudes, said insulating body having a plurality of



supporting ribs each of which supports a respective hook base, the width of each hook base, as measured in the peripheral direction of the insulating body, increasing from the free end thereof toward its associated lamella segment.

4,342,934

PREFABRICATED BRUSH HOLDER ASSEMBLY FOR USE IN SMALL ELECTRIC MOTORS

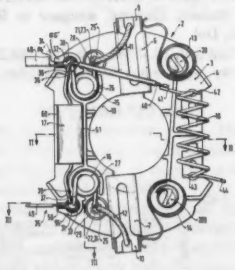
Albert van Wijhe, Bühlertal; Ernst Münster, Bühl; Gerhard Wagenbrenner, Rastatt; Fritz Röcker; Joachim Armbruster, both of Bühlertal; Klaus Metzger, Ottersweier, and Rüdiger Ratzel, Bühl, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 8, 1980, Ser. No. 138,575

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914853

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—239 **7 Claims**



1. A brush holder assembly designed for prefabrication by an automatic machine and further designed to be used with commutators of small electric motors used in fuel pumps and the like, comprising: a carrier plate manufactured of an insulating material, the carrier plate having a central opening with a periphery, the opening being so sized that a commutator of a small electric motor can be received therein and further having a first side and a second side; two hollow brush carriers fixed on the first side of the carrier plate so as to abut the periphery of the opening at opposed points; two carbon brushes, each located within a corresponding one of the brush carriers and slidably movable therewithin so as to be abuttable against a commutator received within the opening; two brush springs fixed on the first side of the carrier plate and cooperating with the brushes in a manner that each brush spring can urge a corresponding one of the brushes against a commutator received within the opening; to brush leads, each attached to a corresponding one of the brushes; anti-interference components located on and having lead ends bent toward the first side

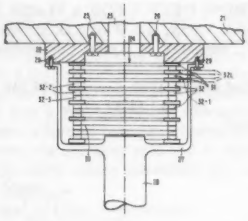
of the carrier plate; two power leads each having an end shaped into an eyelet form, which ends are fixed in the first side of the carrier plate and are electrically connected to at least one of the anti-interference components; and a plurality of electrically conductive grommets fixed in the carrier plate and electrically connecting the brush leads, the power leads and the lead ends of the anti-interference components into an electrical network.

4,342,935

BINARY PIEZOELECTRIC DRIVE FOR LENS FOCUSING SYSTEM

Michael Kallmeyer, Boeblingen; Hans Rösch, Reutlingen; Claus Scheuing, Lorch, and Bernhard Solf, Sindelfingen, all of Fed. Rep. of Germany, assignors to Discovision Associates, Costa Mesa, Calif.

Filed Apr. 10, 1980, Ser. No. 139,033
Int. Cl.[3] H01L *41/08*; G11B *7/00*
U.S. Cl. 310—328 8 Claims



1. A high resolution focusing system usable in connection with a focusing lens for controlling the position along an optical axis of the form point of a beam of light passing through said lens in the direction of said axis, comprising:

a support structure having an opening through which said light beam passes;

a lens holder for holding said focusing lens; and

a piezoelectric driver coupling said lens holder to said support structure for imparting controllable relative motion to said lens holder with respect to said support structure, said piezoelectric driver comprising:

a plurality of annularly shaped piezocrystal members each having oppositely facing annularly shaped electrical contact faces,

a plurality of rigid annularly shaped insulating members in contact with and separating said piezocrystal members from one another, such that said piezocrystal members and said insulating members form a hollow cylindrical composite structure, the opposite ends of which are attached to said support structure and said lens holder, respectively, such that said light beam passes through the center of said cylindrical structure substantially coaxially therewith, and also passes through said lens, and

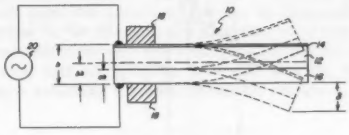
electrical drive means coupled to the contact faces of said piezocrystal members for supplying a control signal to, and thereby controlling the lengths of, said piezocrystal members to thereby control the relative position of said lens with respect to said support structure.

4,342,936

HIGH DEFLECTION BANDWIDTH PRODUCT POLYMERIC PIEZOELECTRIC FLEXURE MODE DEVICE AND METHOD OF MAKING SAME

Michael A. Marcus, Fairport, and James K. Lee, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,591
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—330 15 Claims



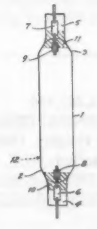
1. A piezoelectric flexure mode device, comprising: a sheet of polymeric piezoelectric material poled in a direction parallel with the thickness of the sheet; a first electrode bonded to one side of said sheet, said first electrode comprising less than 1% of the total thickness of said flexure mode device, and a second electrode bonded to the other side of said sheet, said second electrode comprising between about 2% and about 37% of the total thickness of said flexure mode device, and being of a thickness sufficient to substantially maximize the Deflection Bandwidth Product of the flexure mode device.

4,342,937

METAL HALOGEN VAPOR LAMP PROVIDED WITH A HEAT REFLECTING LAYER

Ferenc Nágel, Budapest, Hungary, assignor to Egyesült Izzólámpa és Villamossági Rt., Budapest, Hungary

Filed Feb. 12, 1980, Ser. No. 120,915
Int. Cl.[3] H01J *5/16*
U.S. Cl. 313—113 5 Claims



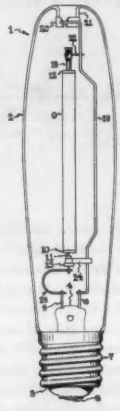
1. A metal halogen vapor lamp having a discharge tube which is permeable to light and has a high melting point, wherein there are electrodes at each end of said discharge tube having power supply elements attached thereto, said discharge tube containing inside thereof a metal of high vapor pressure at operational temperatures, a noble gas and at least one metal and a halogen which forms a metal halide with said metal and a heat reflecting layer coated on said discharge tube in an area adjacent said electrodes, the improvement wherein a binding layer comprising $MgO\text{-}MgCl_2\text{-}H_2O$ is between the heat reflecting layer and the discharge tube, binding them together.

4,342,938

UNIVERSAL BURNING CERAMIC LAMP

Jack M. Strok, Garrettsville, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,953
Int. Cl.³ H01J *61/24*
U.S. Cl. 313—174 **6 Claims**



1. An alkali metal vapor lamp comprising:
a tubular elongated envelope of light-transmitting ceramic material having a pair of electrodes sealed into opposite ends,
one end of said envelope having a metal exhaust tube sealed thereto, said tube having a vent opening into the interior of said envelope and being sealed off at its outer end,
an ionizable medium including mercury-alkali amalgam sealed within said envelope in a quantity exceeding that vaporized during operation of said lamp whereby an unvaporized excess remains in liquid form during operation, the heat balance in said envelope making the sealed end of said tube the cold spot in said envelope,
and said tube having an end portion next to said sealed end serving as a reservoir for excess amalgam, said end portion being so dimensioned throughout a volume sufficient to accommodate said entire excess that the capillary attraction between the walls of the tube and the amalgam is better than 2 times the force of gravity.

4,342,939

UNIVERSAL BURNING CERAMIC LAMP

Charles I. McVey, Shaker Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 2, 1980, Ser. No. 145,778
Int. Cl.³ H01J *61/22*
U.S. Cl. 313—174 **4 Claims**

1. An alkali metal vapor lamp comprising:
a tubular elongated envelope of light-transmitting ceramic material having a pair of electrodes supported in opposite ends on wire inleads sealed through ceramic end plugs,
an ionizable medium including mercury-alkali amalgam sealed within said envelope in a quantity exceeding that vaporized during operation of said lamp, the heat balance in said lamp locating the cold spot at an end of said envelope,
and an amalgam retention compartment in the cold spot end of said envelope serving as a reservoir for excess amalgam, said compartment being formed by a metal partition substantially co-extensive with the end plug and having an aperture through which the inlead sealed through the end plug extends, said partition being supported by the inlead

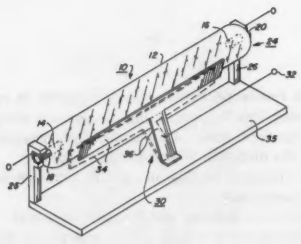
and spaced a distance within the range of capillary forces for said amalgam from the inside surface of the end plug.

4,342,940

TRIGGERING DEVICE FOR A FLASH LAMP

Joseph P. Mrusko, Victor, and Wayne D. Everdyke, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1980, Ser. No. 118,338
Int. Cl.³ H01J *61/54*
U.S. Cl. 313—198 **2 Claims**

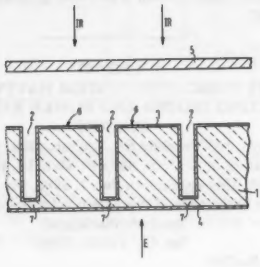


1. A flash lamp apparatus comprising:
an arc discharge flash lamp having an elongated envelope containing an ionizable gas therein and having;
a pair of electrodes at each end, said lamp being adapted for connection at each electrode to a source of electrical power;
support means for seating said lamp in an operative position;
a resilient T-shaped bar electrode for maintaining said lamp in said seated position, said bar electrode having an elongated upper sequent with opposing major side surfaces, said electrode being mounted so as to engage one of said side surfaces with a substantial portion of the longitudinally extending surface of the lamp envelope; and
a source of triggering voltage electrically connected to said bar electrode, the bar electrode applying the triggering voltage to the lamp along the envelope surface contacted by said upper segment side surface so as to cause ionization of said gas;
whereby said bar electrode serves both to fixedly secure the lamp in its operative position while simultaneously applying the required triggering voltage to the lamp.

4,342,941
THERMAL IMAGE EXPOSURE PLATE

Peter W. Steinhage, Wiesbaden, Fed. Rep. of Germany, assignor to Heimann GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Apr. 22, 1980, Ser. No. 142,704
Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2922048
Int. Cl.³ H01J *31/00*
U.S. Cl. 313—374 8 Claims



1. A thermal image exposure plate system, comprising:

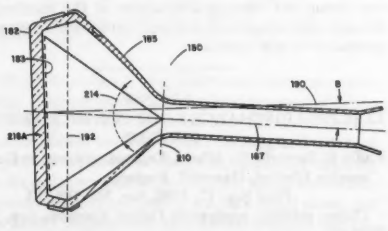
conversion layer means for producing a topically distributed pattern of a given property as a result of and which corresponds to a thermal image incident on the layer means; and

said conversion layer means having a surface facing the incident thermal image formed into a grid pattern of a plurality of picture elements, each picture element being defined by a cut channel extending from the surface facing the image to a depth less than a thickness of the layer means so that a heat-conducting through-portion of the layer means is formed between adjacent picture elements and between the radiation side and an opposite scanning side of the layer means accessible for scanning by an electron beam.

4,342,942
PROJECTION TUBE ALIGNMENT MEANS

Richard L. Hockenbrock, Mundelein, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 154,197, May 29, 1980, which is a continuation-in-part of Ser. No. 110,413, Jan. 7, 1980. This application Oct. 17, 1980, Ser. No. 197,883
Int. Cl.³ H01J *31/00, 61/30*
U.S. Cl. 313—477 R 4 Claims



1. For use in a projection television system, an article of manufacture comprising a glass cathode ray picture tube having a funnel and a circular face panel with a rearwardly extending skirt and a window for receiving a rectangular cathodoluminescent screen, said skirt being conjoinable with said funnel by mating along interfacing seal edges on said skirt and on said funnel, with the seal edge of said skirt defining a plane whose normal makes a non-zero acute cant angle with respect to the axis of said window, and with the seal edge of said funnel defining a plane whose normal makes a non-zero acute cant angle with respect to the funnel axis, said tube being characterized by having a first pair of embossments on said funnel azimuthally spaced 180 degrees apart adjacent to said seal edge of said funnel, and a second pair of embossments on said face panel skirt azimuthally spaced 180 degrees apart adjacent to the seal edge on said skirt, the azimuthal position of said first and second pairs of embossments on said funnel and face panel skirt being predetermined such that when said pairs are aligned in a first tube configuration, the relative rotational position of the face panel and funnel are such that the face panel window is normal to the tube axis, and such that when said first and second pairs of embossments are aligned 180 degrees displaced, a second tube configuration is formed with the face panel window exhibiting a predetermined tilt relative to the tube axis.

4,342,943
P_2O_5-V_2O_5-PBO GLASS WHICH REDUCES ARCING IN FUNNEL PORTION OF CRT

Edward A. Weaver, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 17, 1979, Ser. No. 85,822
Int. Cl.³ C03C *3/10;* H01J *31/00;* C03C *3/16;* H01B *1/08*
U.S. Cl. 313—479 6 Claims

1. In a cathode ray tube having a neck portion and a funnel portion, an electrically resistant film coating at least one of said portions within the tube adapted to reduce arcing, said film being a glass consisting essentially in weight percent of approximately:

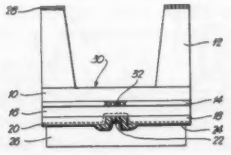
Vanadium Oxide	50% to 75%
Phosphorous Oxide	15% to 40%
Lead Oxide	5% to 20%

in which said glass composition has a softening point no higher than about 475° C., and an electrical resistance within the range of about 100,000 ohms to about 100 megohms per square.

4,342,944
LIGHT EMITTING DIODES WITH HIGH EXTERNAL QUANTUM EFFICIENCY

Anthony J. SpringThorpe, Richmond, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 15, 1980, Ser. No. 186,967
Int. Cl.³ H01J *1/70*
U.S. Cl. 313—499 17 Claims



1. A surface emitting light emitting diode comprising:

a semiconductor substrate on which is grown a double heterostructure consisting of a first confining layer, an active layer, and a second confining layer;

a transparent element on one side of the heterostructure permitting exit of light emitted from an emitting region of the active layer;

a reflective element on the other side of the heterostructure for reflecting emitted light towards the transparent element, the transparent element, the emitting region, and the reflective element being substantially aligned;

first contact metallization extending around the transparent element;

a second contact metallization extending around the reflective element; and

current directing means causing current entering at one contact metallization to converge towards the emitting region and to diverge from the emitting region to the other contact metallization.

4,342,945

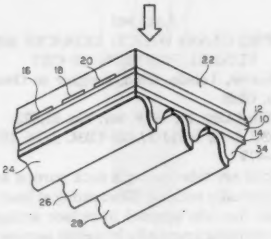
ELECTROLUMINESCENT THIN FILM DEVICE

Richard D. Ketchpel, Santa Barbara, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 20, 1980, Ser. No. 151,562

Int. Cl.³ H05B *33/02, 33/22*

U.S. Cl. 313—505 **9 Claims**



1. In a thin film electrical device, including a thin electroluminescent film, a plurality of parallel first electrodes on a first side of said film, and a plurality of parallel second electrodes on a second side of said film, each said first electrode comprising:

an energizing portion disposed sufficiently close to a first surface of said film to activate said film upon the application of an electrical potential between said first and second electrodes; and

a coupling portion, spaced sufficiently from said film to resist the effects of electrical breakdown in said film.

4,342,946

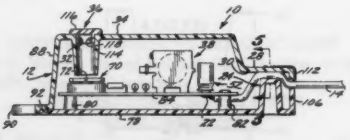
TIMED AUTOMATIC HEADLIGHT SHUT-OFF

Joseph F. Valenzona, Harbor City, and Lloyd Hewitt, Woodland Hills, both of Calif., assignors to Orion Industries, Inc., Compton, Calif.

Filed May 5, 1980, Ser. No. 146,471

Int. Cl.³ B60Q *1/02*

U.S. Cl. 315—82 **9 Claims**



1. A vehicle light time delay deactivation system for maintaining said vehicle lights coupled to a vehicle current source in an activated state for a predetermined time interval subsequent to a vehicle ignition switch being deactivated comprising:

a casing having an opening formed through a wall thereof, said opening being formed in a predetermined location;

relay means coupled to said vehicle lights in series relation for maintaining coupling between said vehicle lights and said vehicle current source for said predetermined time interval;

transistor means coupled in series relation to said relay means for providing amplification to actuate said relay means;

a variable resistor coupled in series relation to a base of said transistor means, said variable resistor being mounted within said casing in aligned relation with said casing opening for adjusting said predetermined time interval at the discretion of the user; and,

a capacitor coupled in parallel between an input to said variable resistor and ground for maintaining input current to said variable resistor when said ignition switch is deactivated.

4,342,947

LIGHT INDICATING SYSTEM HAVING LIGHT EMITTING DIODES AND POWER REDUCTION CIRCUIT

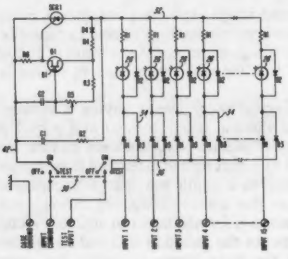
Jon A. Bloyd, 155 Franklin St., Dayton, Ohio 45402

Continuation of Ser. No. 842,410, Oct. 14, 1977, Pat. No. 4,211,956. This application Jul. 7, 1980, Ser. No. 166,067

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.³ H05B *43/00*

U.S. Cl. 315—199 **9 Claims**



1. Apparatus for controlling a component operated by low voltage direct current in response to actuation of a device operated by high voltage alternating current, said apparatus comprising rectifying means including a silicon controlled rectifier connected to said direct current operated component and to said alternating current operated device, said rectifying means being effective to rectify the alternating current received from said device into direct current for said direct current component, said direct current component being connected through a resistor to said rectifier for limiting the direct current through said component, said component being connected to said device through a diode, and voltage phase control means for limiting conduction of the rectified current through said component and said resistor for limiting the heat produced by said resistor.

4,342,948

ELECTRIC DISCHARGE LAMP CONTROL CONVERTER CIRCUITS

Philip R. Samuels, St. Albans, England, assignor to David Engineering Limited, Haverhill, England

Filed Sep. 17, 1980, Ser. No. 188,253

Claims priority, application United Kingdom, Sep. 20, 1979, 7932691

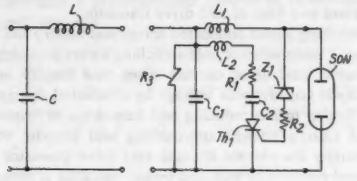
Int. Cl.³ H05B *41/23*

U.S. Cl. 315—290 **11 Claims**

1. A converter circuit for connection between an existing electric discharge lamp operating circuit and a replacement electric discharge lamp of a different type from that intended to be operated by the existing electric discharge lamp operating circuit, the converter circuit comprising: converter inductance means connectable to adjust total series inductance to a value suitable for operation of said replacement lamp;

igniter circuitry coupled to said converter inductance means for producing ignition voltages;

converter output terminal means connected to said converter inductance means and to said igniter circuitry to



apply, in use, said ignition voltages to said replacement lamp; and

voltage protection means coupled to said igniter circuitry to protect, in use, said existing lamp operating circuit from said ignition voltages.

4,342,949

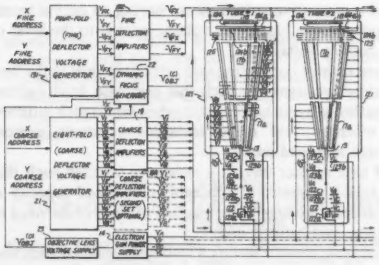
CHARGED PARTICLE BEAM STRUCTURE HAVING ELECTROSTATIC COARSE AND FINE DOUBLE DEFLECTION SYSTEM WITH DYNAMIC FOCUS AND DIVERGING BEAM

Kenneth J. Harte, Carlisle, and Edward C. Dougherty, Dracut, both of Mass., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 9, 1979, Ser. No. 93,008

Int. Cl.³ H01J *29/70, 29/74*

U.S. Cl. 315—409 **35 Claims**



1. In an all electrostatic electron beam tube having an evacuated housing, electron gun means disposed at one end of the evacuated housing for producing a beam of electrons, electrostatic deflector means secured on the housing and disposed about the path of the beam of electrons, means for applying deflection electric potentials to the deflector means for deflecting the electron beam to a desired point on a target plane, and lens means axially aligned with said deflector means and disposed intermediate the deflector means and the target plane, the improvement comprising the addition of electron beam divergence means for causing the electron beam to diverge at a small angle of divergence from a source point located at or near the entrance to the deflector and while entering the deflector in contrast to an electron beam from a source point an infinite distance away having substantially parallel rays as is the case with a collimated electron beam whereby electron beam astigmatism at the target plane is minimized.

4,342,950

SPINDLE ROTATION CONTROL SYSTEM

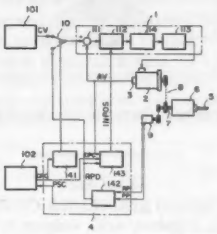
Yoshinori Kohzai; Yoshiki Fujioka, and Naoto Ota, all of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 25, 1980, Ser. No. 190,661

Claims priority, application Japan, Oct. 9, 1979, 54-130152

Int. Cl.³ G05B *5/01*

U.S. Cl. 318—611 **9 Claims**



1. A system for receiving an orientation command signal, and for controlling the rotation of a spindle which comprises:

a motor having a variable speed;

speed detecting means for detecting the speed of said motor and for producing a signal indicative of the actual speed thereof;

a speed control circuit having a variable gain, operatively connected to the speed detecting means and to the motor, for controlling said motor so as to narrow to zero a deviation between the signal indicative of the actual speed thereof and a command speed signal, and for outputting a signal representing said deviation;

a spindle driven by said motor which is rotated at a commanded speed in accordance with the output of said speed control circuit;

an orientation control circuit, operatively connected to the speed detecting means and to the motor, for producing a position deviation signal on the basis of the rotational position of said spindle and a commanded stopping position;

changeover means for applying one of the position deviation signal produced by said orientation control circuit and the command speed signal to said speed control circuit in response to said orientation command signal, so that the rotation of said motor, and hence said spindle, is controlled so as to reduce to zero the position deviation signal; and

means for raising the gain of said speed control circuit upon detecting that the rotational position of said spindle has reached a position in the vicinity of the commanded stopping position.

4,342,951

SERVOELECTRIC MICROMANIPULATOR FOR MOVEMENT ON SPHERICAL COORDINATES

Ortwin Muller; Klaus Biber, both of Aalen; Roland Schmauder, Oberkochen, all of Fed. Rep. of Germany, and Manfred Spitznas, Encino, Calif., assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,334

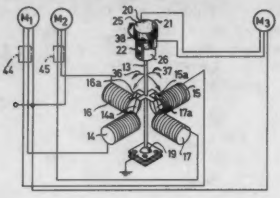
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854514

Int. Cl.³ G05B *11/32*

U.S. Cl. 318—625 **8 Claims**

1. A micromanipulator for a surgical instrument, such as a vitrectomy instrument, said micromanipulator causing said surgical instrument to move in any desired direction in a spherical coordinate system, said micromanipulator being characterized in that the surgical instrument is guided in the microma-

nipulator by the operation of servomotors which are activated by manual control of a single, remote-controlled operation



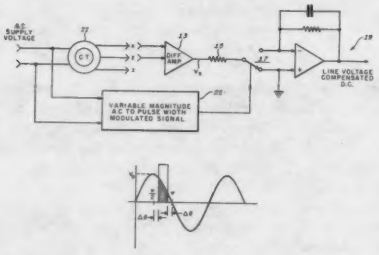
element which can be deflected in the direction of the spherical coordinates.

4,342,952

SYNCHRO STABILIZER CIRCUIT

Robert A. Bowie, Glendale, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed May 20, 1981, Ser. No. 265,309
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—654 **7 Claims**



1. A line voltage compensator for a synchro device comprising a pulse width modulator connected to the a.c. supply voltage used to energize the synchro device, means to produce a sinusoidal two wire information signal representative of the electrical output of the synchro device, rectifier/filter means and switching means to apply the two wire information signal to the rectifier/filter during the occurrence of a pulse from said modulator, said modulator including means for producing a pair of sinusoidal voltages having magnitudes proportional to the magnitude of a supply voltage and shifted in phase by a predetermined amount with respect to each other and with respect to said supply voltage, a source of d.c. threshold voltage having a magnitude representative of the nominal peak value of the a.c. supply voltage, means responsive to each of said sinusoidal voltages for providing a comparator signal when and only when the magnitude of the respective sinusoidal voltage exceeds said threshold, means responsive to first and second comparator signals representing a pair of sinusoidal voltages for producing a width modulated signal during the interval between the termination of the first comparator signal and the inception of the second comparator signal, and means to apply said width modulated signal to said switching means.

4,342,953

BATTERY PROTECTION CIRCUIT

John J. Collins, Kansas City, Mo., assignor to Nicholl Brothers, Inc., Kansas City, Mo.

Filed May 2, 1980, Ser. No. 145,900
Int. Cl.³ H02J *7/10*
U.S. Cl. 320—13 **11 Claims**

1. A battery protection circuit for a device employing a rechargeable battery to protect said battery from damage due to deep discharge thereof, said circuit comprising:

(a) a rechargeable battery having a battery voltage and a dropout voltage at which no further discharge of said battery is desirable;

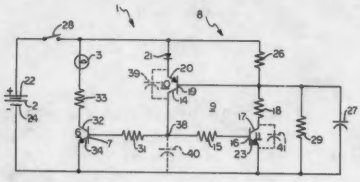
(b) load means operable by current from said battery;

(c) a load drive transistor connecting said load means across said battery and operable to allow current flow through said load means upon the application of suitable drive current to a base of said drive transistor;

(d) switching means connected across said battery and to the base of said transistor, said switching means providing said suitable base drive current when said battery voltage exceeds said dropout voltage by a selected degree; said switching means reducing said base drive in response to said battery voltage approaching said dropout voltage whereby the current through said drive transistor is reduced resulting in said load means operating at noticeably diminished capacity to warn of the need to recharge said battery; and said switching means ceasing to provide said base drive in response to said battery voltage decreasing to said dropout voltage to prevent deep discharge of said battery:

(e) a voltage sensing resistor connected to one terminal of said battery;

(f) regenerative switch means connected between said sens-



ing resistor and the other terminal of said battery; said regenerative switch means being turned on by a voltage across said sensing resistor above a selector level and being turned off upon said voltage across said sensing resistor decreasing below said selected level;

(g) said regenerative switch means having an output terminal providing a base drive voltage related to the level of said battery voltage;

(h) a base resistor connecting said output terminal to the base of said drive transistor such that said base drive current flows through said base resistor when said switch is turned on whereby said drive transistor conducts current through said load means;

(i) said base resistor having a resistance selected such that said load is operated at noticeably diminished capacity as said dropout voltage is approached to warn of the need to recharge said battery; and

(j) said sensing resistor having a resistance selected such that said regenerative switch means is turned off upon said battery voltage decreasing to said dropout voltage whereby said base drive current ceases and said drive transistor is cut off thereby cutting off the flow of current through said load means to prevent further discharge of said battery.

4,342,954

BATTERY CONDITIONING METHODS AND APPARATUS

Gerald W. Griffith, Tustin, Calif., assignor to Laser Products Corporation, Fountain Valley, Calif.

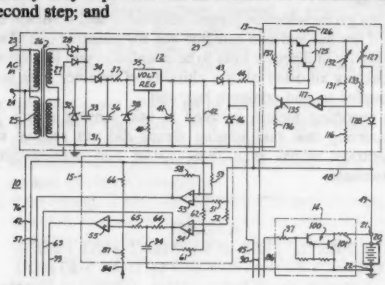
Filed Oct. 1, 1979, Ser. No. 80,876
Int. Cl.³ H01M *10/44;* H02J *7/04*
U.S. Cl. 320—14 **29 Claims**

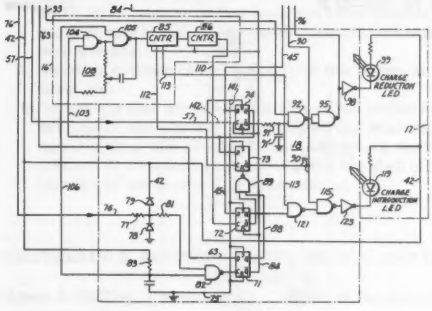
1. A method of conditioning a secondary battery, comprising in combination the steps of:

predetermining for the particular type of battery the electric

charge required to restore the battery from a predetermined first level to a higher second charge level;

comprising a conditioning operation of a first step of reducing an unknown electric charge in the battery to said first level and a second step of introducing only said predetermined required electric charge into the battery by applying to the battery only a predetermined number of coulombs in said second step; and





conditioning the battery by administering to the battery in sequence said first step to reduce said unknown electric charge to said first level and said second step to restore the battery to said higher second charge level by introduction of only said predetermined required electric charge into the battery.

4,342,955

VOLTAGE REGULATOR FOR A FIXED FIELD A.C. GENERATOR

Leroy A. Gant, 521 Jasmine La., Santa Maria, Calif. 93454

Filed Sep. 2, 1980, Ser. No. 183,186

Int. Cl.³ H02J 7/14

U.S. Cl. 322—25 **3 Claims**

1. A solid-state voltage regulator for regulating the supply of power by a fixed field A.C. generator which generates current to charge an electrical storage battery, comprising:

(a) a battery current charging path having one end being connectable to the fixed field A.C. generator and another end being connectable to the storage battery, said current charging path including a silicon controlled rectifier having a gate electrode;

(b) means for sensing the voltage of the storage battery and for generating first and second logic control signals in response to the battery voltage being above and below a predetermined level, including

(i) means for generating a first reference voltage proportional to the predetermined level,

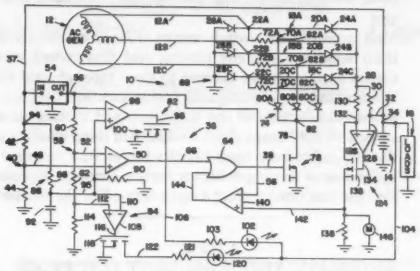
(ii) means for generating a second voltage proportional to the battery voltage,

(iii) first means for comparing the first reference voltage with the second voltage and for producing a signal of one value in response to the second voltage exceeding the first reference voltage and for producing a signal of another value is response to the first reference voltage exceeding the second voltage; and

(iv) a logic gate having an input receiving the signal of one or another value and having a control output;

(c) a first gate electrode control path having one end connectable to the fixed field A.C. generator and another end connected to said gate electrode, said first gate electrode control path having a current limiting resistor;

(d) a second gate electrode control path having one end connected between said current limiting resistor and said gate electrode and another end connected to ground, said second gate electrode control path including a transistor



connected to said control output and being turned on and off in response to the first and second logic control signals, respectively;

(e) means for generating a third reference voltage proportional to a predetermined level of charging current;

(f) means for generating a fourth voltage proportional to the level of charging current in said battery current charging path; and

(g) second means for comparing the third reference voltage with the fourth voltage and for producing a signal of one value in response to the fourth voltage exceeding the third reference voltage and for producing a signal of another value in response to the third reference voltage exceeding the fourth voltage, said logic gate having another input receiving the signal of one or another value from said second means for comparing.

4,342,956

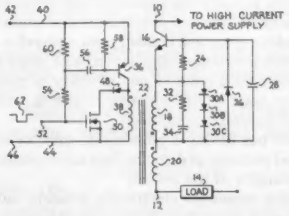
PROPORTIONAL BASE DRIVE CIRCUIT

William R. Archer, Ft. Wayne, Ind., assignor to General Electric Company, Salem, Va.

Filed Dec. 23, 1980, Ser. No. 219,736

Int. Cl.³ H03K 17/04

U.S. Cl. 323—289 **8 Claims**



1. In a circuit for repetitively switching a bipolar transistor

between conducting and non-conducting states at a relatively high frequency switching rate, the switching transistor being connected to a relatively high magnitude direct current source and being controlled by switching signals from a relatively low voltage magnitude current source, an improved proportional base drive circuit comprising:

a transformer having at least first, second and third windings, said first and said second windings being connected in series with a collector and an emitter terminal of the transistor between the high magnitude current source and a load, at least said first winding having a first end thereof connected to the emitter terminal of the transistor;

means for connecting a base terminal of the transistor to a second end of said first winding;

first controllable switch means serially connected with said third winding across said low voltage magnitude source; and

second controllable switch means connected across said third winding, whereby closing said first switch means causes a magnetizing current to flow through said third winding thereby exciting said first and second windings to initiate conduction of the transistor, and closing of said second switch means short circuits said third winding and thereby effectively open-circuits the emitter terminal of the transistor forcing collector current through the collector-base junction to effect a rapid turn-off of the transistor.

4,342,957

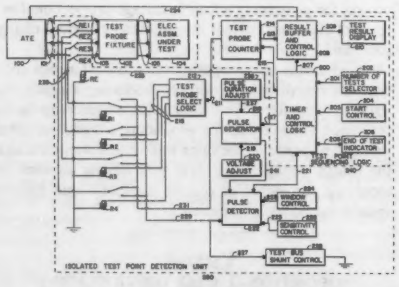
AUTOMATIC TEST EQUIPMENT TEST PROBE CONTACT ISOLATION DETECTION APPARATUS AND METHOD

Robert J. Russell, South Boston, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 28, 1980, Ser. No. 134,808

Int. Cl.³ G01R *31/02, 15/12*

U.S. Cl. 324—73 R **34 Claims**



1. A secondary test apparatus for determining test probe electrical contact isolation, said secondary test apparatus for use with a primary test apparatus, said primary test apparatus having a test fixture having a plurality of test probes for making temporary electrical contact with an electronic assembly to be tested by said primary test apparatus, said electronic assembly having electric circuits formed therein, said plurality of test probes for making electrical contact with a plurality of points within said electric circuits and wherein there exists an electrical path between each point of said plurality of points and at least one other point of said plurality of points, wherein said secondary test apparatus comprises:

a. a detector bus having a plurality of detector lines, each line of said plurality of detector lines corresponding to one of said plurality of test probes;

b. an isolation means for electrically isolating each of said plurality of detector lines from its associated one of said plurality of test probes;

c. a common bus;

d. a test bus;

e. a stimulation means, coupled to said common bus, for generating an electrical test signal;

f. a sensing means, coupled to said test bus, for receiving an electrical signal above a predetermined threshold and wherein said electrical signal includes said electrical test signal;

g. a test probe selection means, coupled to said common bus, said test bus and said detector bus, for selecting one of said plurality of detector lines to be coupled to said test bus and selecting all other of said plurality of detector lines to be coupled to said common bus; and

h. a reporting means, coupled to said sensing means, for reporting that said sensing means did not receive said electrical signal at a level above said predetermined threshold.

4,342,958

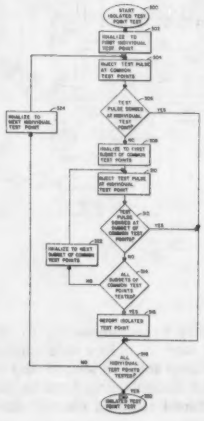
AUTOMATIC TEST EQUIPMENT TEST PROBE CONTACT ISOLATION DETECTION METHOD

Robert J. Russell, South Boston, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 28, 1980, Ser. No. 134,809

Int. Cl.³ G01R *31/02, 15/12*

U.S. Cl. 324—73 R **13 Claims**



1. A method of determining test probe electrical contact isolation when utilizing a test apparatus, said test apparatus having a test fixture having a plurality of test probes for making temporary electrical contact with an electronic assembly to be tested by said test apparatus, said electronic assembly having electric circuits formed therein, said plurality of test probes for making electrical contact with a plurality of points within said electric circuits, said test apparatus comprising a stimulation means, a sensing means, and a test probe selection means, the method comprising the steps of:

a. selecting a set of common probes from said plurality of test probes, said set of common probes being associated with common points of said plurality of points, said common points being points within said electric circuits that are associated with electrical conductors carrying signals that are widely distributed throughout said electronic assembly such that there exists an electrical path between each non-common point of said plurality of points and at least one of said common points;

b. electronically isolating said electronic assembly from said test apparatus;

c. selecting a one of said plurality of test probes;

d. electrically stimulating said set of common probes by said stimulation means;

e. sensing said one of said plurality of test probes by said sensing means for a response to said electrical stimulation;
f. determining if said sensing means detected an electrical signal in response to said electrical stimulation above a predetermined threshold and if so, selecting a next one of said plurality of test probes to be said one of said plurality of test probes and returning to step d. if all of said plurality of test probes have not been selected, or going to step g. if no electrical signal above said predetermined threshold is detected by said sensing means, or completing contact isolation test if all of said plurality of test probes have been selected;
g. selecting a one of said set of common probes;
h. electrically stimulating said one of said plurality of test probes by said stimulation means;
i. sensing a one of said set of common probes for a response to said electrical stimulation;
j. determining if said sensing means detected an electrical signal in response to said electrical stimulation above said predetermined threshold and if so selecting a next one of said plurality of test probes to be said one of said plurality of test probes and returning to step d., or going to step k. if no electrical signal above said predetermined threshold is detected by said sensing means;
k. selecting a next one of said set of common probes to be said one of said common probes and returning to step h. if all of said common probes have not been selected, or going to step l. if all of said set of common probes have been selected;
l. reporting said one of said plurality of test probes as isolated; and,
m. selecting a next one of said plurality of test probes to be said one of said plurality of test probes and returning to step d. if all of said plurality of test probes have not been selected, or completing contact isolation test if all of said plurality of test probes have been selected.

4,342,959

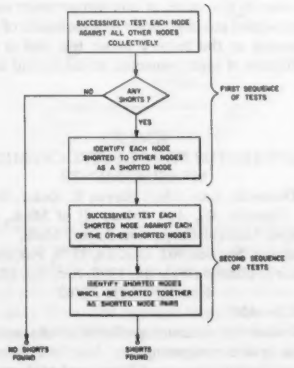
METHOD OF ELECTRICAL SHORT TESTING AND THE LIKE

James K. Skilling, Harvard, Mass., assignor to GenRad, Inc., Concord, Mass.

Continuation of Ser. No. 51,204, Jun. 22, 1979, abandoned. This application Apr. 29, 1981, Ser. No. 258,762

Int. Cl.³ G01R *15/12*

U.S. Cl. 324—73 PC **4 Claims**


SUCCESSIVELY TEST EACH NODE AGAINST ALL OTHER NODES COLLECTIVELY
ANY SHORTS ?
NO
YES
FIRST SEQUENCE OF TESTS
IDENTIFY EACH NODE SHORTED TO OTHER NODES AS A SHORTED NODE
SUCCESSIVELY TEST EACH SHORTED NODE AGAINST EACH OF THE OTHER SHORTED NODES
IDENTIFY SHORTED NODES WHICH ARE SHORTED TOGETHER AS SHORTED NODE PAIRS
SECOND SEQUENCE OF TESTS
NO SHORTS FOUND
SHORTS FOUND

1. A method of reducing the number of tests required to detect shorts and the like between nodes of an apparatus under test, the apparatus having a plurality of such nodes, and to identify shorted nodes, the method including a first sequence of tests in which shorted nodes are detected and, in the event that shorted nodes are detected, a second sequence of tests to identify shorted node pairs, the method comprising the steps of successively selecting an individual node of said plurality and connecting together the remaining nodes of said plurality in a group; testing for a short between each individual selected node and the group of the remaining connected nodes; detecting during said testing those individual nodes which are shorted to one or more other nodes of the group; and thereafter, in the event that shorted nodes are detected, testing for a short between each detected shorted node and each of the other detected shorted nodes to identify shorted node pairs.

4,342,960

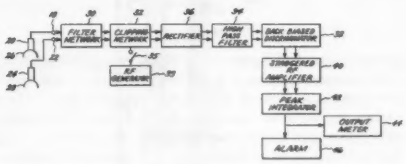
BRUSH ALIGNMENT APPARATUS

Fred H. Sawada, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 5, 1980, Ser. No. 184,358

Int. Cl.³ G01R *31/02*; G08B *21/00*

U.S. Cl. 324—158 MG **4 Claims**



1. An apparatus for aligning brushes of a dynamoelectric machine to minimize arcing of the brushes, said apparatus comprising:
means for receiving from a brush of a dynamoelectric machine a composite signal including noise signals and high-frequency information signals, said composite signal produced during operating mode of the dynamoelectric machine wherein a buck or boost current is superimposed on a preselected level of excitation current applied to the machine;
a first filter network for removing low-frequency components of said noise signal from said composite signal;
a clipping network connected to said first filter network for removing from said composite signal all components having absolute value of amplitude in excess of a preselected value;
means for rectifying the signal from said clipping network to provide a rectified signal;
a second filter network for removing from said rectified signal substantially all of the components of said noise signals input to said rectifying means and having frequencies less than a cutoff value determined from the fundamental slot and bar frequencies of the dynamoelectric machine;
means for amplifying and integrating said signal from said second filter to produce an output signal, said output signal, together with the level of said boost or buck current, being indicative of brush alignment adjustment required to minimize brush arcing; and
output means for displaying said output signal.

4,342,961

APPARATUS FOR MEASURING THE MUZZLE VELOCITY V-NULL OF A PROJECTILE FIRED FROM A WEAPON

Jakob Zimmermann, Pfäffikon, and Willi Kocher, Zürich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Feb. 17, 1981, Ser. No. 235,660

Claims priority, application Switzerland, Mar. 11, 1980, 1896/80

Int. Cl.³ G01P *3/66*

U.S. Cl. 324—179 **8 Claims**

1. An apparatus for measuring the muzzle velocity of a projectile fired out of a weapon having a weapon barrel containing a lengthwise axis, especially a sabot projectile, wherein

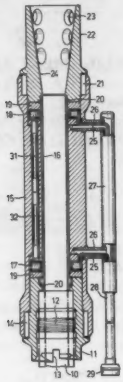
the measuring apparatus is capable of being secured to the muzzle of the weapon barrel, comprising:

two measuring coils;

each of said measuring coils having a measuring coil axis;

said two measuring coils being arranged in spaced relationship from one another such that the measuring coil axes substantially coincide with the weapon barrel axis;

a sleeve member having opposed ends;



said sleeve member possessing an internal diameter which is essentially the same as the internal diameter of the weapon barrel;

said sleeve member having an external diameter which is essentially the same as the internal diameter of the measuring coils; and

one of the measuring coils being arranged at the one opposed end of the sleeve member and the other measuring coil at the other opposed end of the sleeve member.

4,342,962

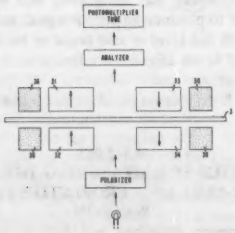
METHOD FOR MEASURING COERCIVITY IN MAGNETIC MATERIALS

George P. Vella-Coleiro, Summit, and Raymond Wolfe, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 21, 1980, Ser. No. 142,013

Int. Cl.³ G01N *27/72*; G01R *33/12*

U.S. Cl. 324—232 **10 Claims**



1. A method of measuring coercivity in materials capable of supporting single wall magnetic domains by observing a movement of domain patterns in said material, which movement is capable of being related to said coercivity, comprising the steps of producing a domain pattern in said material, subjecting said domain pattern to an AC magnetic field and monitoring in a region of said material the movement of said domain pattern induced by said AC magnetic field characterized in that at least 70 percent of the minority domains in said region satisfy the requirements that the minority domain (1) terminates at a point in said region, (2) is at least within 10 degrees of being parallel to the nearest neighbor minority domain, and (3) beyond an imaginary line passing through said point and perpendicular to the direction defined by a least-squares-fit-line of a boundary of said minority domain, has no other minority domain that both has a terminus within and extends beyond a separation distance of said point, where said separation distance is 10 μm; and where said domain pattern in said region is subjected to a static magnetic field having a mean spatial gradient less than 10 Oe/μm .

4,342,963

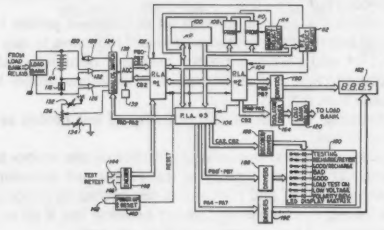
STORAGE BATTERY ELECTROLYTE TEMPERATURE MEASURING APPARATUS

Gary A. Karnowski, Milwaukee, and Durvasula V. Sriramamurty, Glendale, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Feb. 29, 1980, Ser. No. 126,172

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—431 **13 Claims**



1. An automatic battery analyzer including apparatus for compensating for the electrolyte temperature of the battery under test and comprising:

connector means for attachment to the battery under test;

temperature sensing means in association with said connector means and producing an output signal in response to the sensed temperature; and

means coupled to said connector means and said temperature sensing means for performing electrical tests on the battery under test and altering the tests performed in response to the value of said temperature sensing means output signal at a time prior to attachment of said connector means to the battery under test and at a time after attachment of said connector means to said battery under test.

4,342,964

APPARATUS FOR ELECTROCHEMICAL MEASUREMENTS

Howard Diamond, Ann Arbor; Steven E. Enzer, Brooklyn, and Joseph Flowers, Jr., Ann Arbor, all of Mich., assignors to Transidyne General Corp., Ann Arbor, Mich.

Division of Ser. No. 965,901, Dec. 14, 1978, Pat. No. 4,272,245. This application Feb. 14, 1980, Ser. No. 121,341

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—450 **19 Claims**

1. A device for measuring chemical characteristics of a liquid, said device comprising:

a housing having upper and lower end surfaces;

a longitudinally extending channel in said housing terminating at one end thereof at least upper surface of the housing and adapted to receive a capillary tube containing a sample of the liquid;

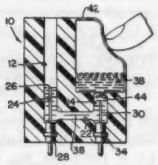
an indicating electrode located about the longitudinal axis of said channel, with said indicating electrode having a tip projecting upwardly into said channel;

a reference electrode spaced from said indicating electrode;

a chamber in said housing bridging said reference and indicating electrodes;

means for introducing an electrolyte into said chamber to cover said electrodes; and

wherein said channel is adapted to guide an open end of the



capillary tube containing the liquid into engagement with the tip of the indicating electrode to displace the electrolyte therefrom whereupon an electrical property is established between the electrodes encompassing the electrolyte which is indicative of the chemical characteristic of the liquid.

4,342,965

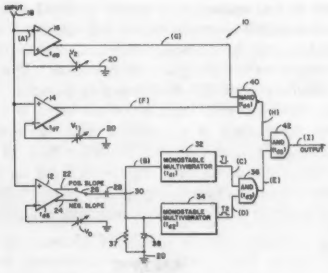
WAVEFORM INSTABILITY DETECTOR

Johnny E. Baldwin, 11031 McBride Dr., Huntsville, Ala. 35803

Filed Sep. 22, 1980, Ser. No. 189,475

Int. Cl.³ H03K *5/153*; G01R *29/027*

U.S. Cl. 328—147 **4 Claims**



1. A waveform instability detector for monitoring a repetitive unipolar pulse waveform for voltage fluctuation comprising: first, second and third voltage comparators; gating means for selectively providing output pulses therefrom and adapted to receive inputs from said voltage comparators; and pulse generating means coupled between an output of said first voltage comparator and said gating means; said gating means comprises first and second AND gates and a NAND gate, said NAND gate having first and second inputs coupled to respective outputs of said second and third comparators, said first AND gate having first and second inputs adapted for receiving outputs from said pulse generating means, and said second AND gate having a first input connected to the output of said NAND gate and a second input connected to the output of said first AND gate for providing an output signal in response to input signals thereto.

4,342,966

POWER AMPLIFIER CIRCUITRY

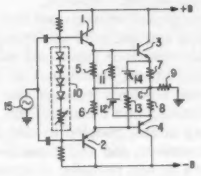
Eijiro Tamura, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1980, Ser. No. 174,918

Claims priority, application Japan, Aug. 31, 1979, 54/119824[U]

Int. Cl.³ H03F *3/30*

U.S. Cl. 330—268 **6 Claims**



1. In a single-ended push-pull power amplifier circuit having a first transistor of a first driver stage, a second transistor of a first output stage where the first and second transistors are Darlington connected, a third transistor of a second driver stage and a fourth transistor of a second output stage where the third and fourth transistors are also Darlington connected, first and second resistors are connected between the respective emitters of the first and second transistors and a common output terminal, third and fourth resistors are connected between the respective emitters of the third and fourth transistors and the common output terminal, and a bias circuit for providing a bias voltage of a fixed value between the bases of the first and third transistors, the improvement comprising at least two series circuits of resistors and constant voltage sources for passing the base currents of the second and fourth transistors between (a) the emitter of the first transistor and the emitter of the fourth transistor and (b) the emitter of the third transistor and the emitter of the second transistor respectively.

4,342,967

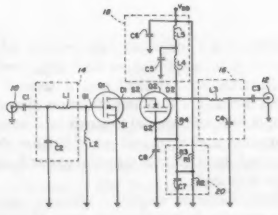
HIGH VOLTAGE, HIGH FREQUENCY AMPLIFIER

Robert J. Regan, Needham, and Paul O. Haugsjaa, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 1, 1980, Ser. No. 145,519

Int. Cl.³ H03F *3/16*

U.S. Cl. 330—277 **6 Claims**



1. A high frequency amplifier comprising:

an input terminal for receiving high frequency power;

a first transistor having a first electrode coupled to said input terminal, a second electrode, and a third electrode coupled to a reference potential;

first dc biasing means, coupled to said first electrode of said first transistor, for applying thereto a dc bias potential substantially equal to said reference potential;

a second transistor having first and second electrodes and a third electrode coupled to said second electrode of said first transistor, said first and second transistors each hav-

ing an associated second to third electrode breakdown voltage, an associated second to first electrode interelectrode capacitance, and an associated third to first electrode interelectrode capacitance;

an output terminal, coupled to said second electrode of said second transistor, for delivering high frequency power to a load;

inductor means coupled between said second electrode of said second transistor and a source of operating potential;

impedance means coupled between said second and first electrode of said second transistor;

capacitive means coupled between said first electrode of said second transistor and said reference potential, and cooperating with said impedance means and said second to first electrode interelectrode capacitance of said second transistor to provide feedback between said second and first electrodes of said second transistor; and

second dc biasing means, coupled to said first electrode of said second transistor, and said capacitive means for applying thereto a dc bias potential of substantially one half of said operating potential and said reference potential;

whereby the operating potential of said amplifier can be substantially equal to one half the sum of said breakdown voltages of said first and second transistors.

4,342,968

ALTERNATING VOLTAGE AMPLIFIER CIRCUIT HAVING A PLURALITY OF SEMICONDUCTOR AMPLIFIER ELEMENTS OPERATED IN A GROUNDED GATE OR GROUNDED BASE CONFIGURATION

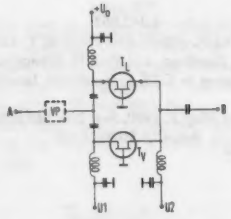
Gerhard Ritter, Thaining, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 7, 1980, Ser. No. 127,958

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917275

Int. Cl.³ H03F *3/68*

U.S. Cl. 330—295 **13 Claims**



1. An alternating voltage amplifier circuit which is reversible in respect of its amplification direction, comprising:

a first input/output terminal and a second input/output terminal defining a first amplification direction from said first input/output terminal towards said second input/output terminal and a second amplification direction from said second input/output terminal towards said first input/output terminal;

a first semiconductor amplifier element and at least one further semiconductor element, each of said semiconductor elements including a control electrode connected to a reference potential, a first main electrode coupled to said first input/output terminal and a second main electrode coupled to said second input/output terminal;

said first main electrode of said further semiconductor amplifier element connected to an operating potential and said second main electrodes connected together;

first and second control voltage terminals for receiving a first control voltage polarity thereacross for one amplification direction and a second control voltage polarity thereacross for the other amplification direction; and

said first and second main electrodes of said first semiconductor amplifier element connected to said first and second control terminals, respectively, both of said semiconductor amplifier elements responsive to the first control voltage polarity to operate in the second amplification direction and only said first semiconductor amplifier element responsive to said second control voltage polarity to operate in the first amplification direction.

4,342,969

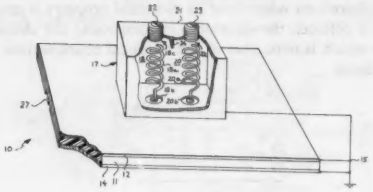
MEANS FOR MATCHING IMPEDANCES BETWEEN A HELICAL RESONATOR AND A CIRCUIT CONNECTED THERETO

Richard T. Myers, and David L. Roberson, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Oct. 6, 1980, Ser. No. 194,681

Int. Cl.³ H01P *5/02, 7/00*

U.S. Cl. 333—33 **6 Claims**



1. In a network for a printed circuit board having an insulative base and including a helical resonator and a cooperating electrical circuit, means for providing impedance matching between said helical resonator and said circuit, comprising:

a. a microstrip transmission line including a microstrip stub printed on said base;

b. means electrically interconnecting a first terminal of a helical resonator, a first terminal of said circuit, and a first electrical end of said microstrip stub;

c. means electrically interconnecting a second terminal of said helical resonator, a second terminal of said circuit, and a second electrical end of said microstrip stub; and

d. said microstrip stub being of an electrical length less than one-quarter wavelength at the resonator frequency of said helical resonator for constituting an inductive impedance, and having overall dimensions and being of a configuration preselected in accordance with the thickness and dielectric constant of said insulative base to provide a predetermined inductive impedance value for said microstrip stub at the resonant frequency of said helical resonator whereby said impedance matching is attained.

4,342,970

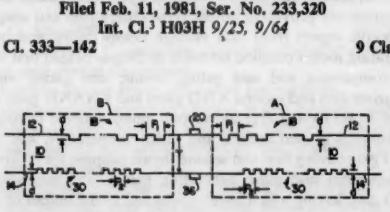
ACOUSTIC WAVE DEVICE

John Melngailis, Newton; Hermann A. Haus, Lexington, and Ana L. Lattes, Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 11, 1981, Ser. No. 233,320

Int. Cl.³ H03H *9/25, 9/64*

U.S. Cl. 333—142 **9 Claims**



1. A surface acoustic wave (SAW) device comprising:

A. a crystal substrate having two substantially planar sur-

faces, said planar surfaces being substantially parallel and separated by a distance T,

B. a first SAW-to-plate mode coupler on a first of said surfaces, said first coupler including:

first SAW converting means for converting a portion of an incident SAW to a bulk acoustic wave (BAW), said first SAW converting means including a plurality of parallel linear surface perturbations, and

first BAW converting means for converting a portion of an incident BAW to a SAW, said first BAW converting means including said plurality of surface perturbations,

C. a first BAW reflector on the first of said surfaces including means for reflecting a portion of an incident BAW,

D. a second BAW reflector on the second of said surfaces including means for reflecting a portion of an incident BAW,

wherein said second BAW reflector is positioned to reflect a portion of BAW's incident thereon and propagating from said first SAW converting means and said first BAW reflector, to said first BAW converting means, and

wherein said first BAW reflector is positioned to reflect a portion of BAW's incident thereon and propagating from said second BAW reflector, to said second BAW reflector, and

whereby SAW's propagating on said first surface at said first BAW converting means reasonantly interact with SAW's produced on said first surface by said first BAW converting means, and

further comprising a second SAW-to-plate mode coupler on said second surface, said second coupling including:

second BAW converting means for converting a portion of an incident BAW to a SAW, said second BAW converting means including a plurality of parallel linear surface perturbations, and

second SAW converting means for converting a portion of an incident SAW to a BAW, said second SAW converting means including said plurality of surface perturbations,

wherein said second BAW converting means is positioned to convert to SAW's a portion of BAW's incident thereon and propagating from said first SAW converting means and said first BAW reflector,

wherein said second SAW converting means is positioned so that a portion of BAW's from said second SAW converting means is incident on said first BAW reflector,

whereby SAW's propagating on said second surface at said second BAW converting means resonantly interact with SAW's produced on said second surface by said second BAW converting means, and

wherein said surface perturbations of said first surface coupler are substantially periodic, having period P_1, and wherein said surface perturbations of said second surface coupler are substantially periodic, having period P_2, and

wherein P_1 differs from P_2, and wherein said first and second couplers are mutually positioned whereby at least a portion of a BAW generated by an incident SAW at one of said couplers is coupled to the other coupler.

4,342,971
CONTINUOUSLY VARIABLE SURFACE ACOUSTIC WAVE DELAY LINE

Clyde L. Councilman, and Larry D. Alter, both of St. Petersburg, Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Dec. 30, 1980, Ser. No. 221,279
Int. Cl.³ H03H *9/42, 9/68, 9/38*
U.S. Cl. 333—152 **8 Claims**

1. A continuously variable surface acoustic wave delay line comprising:

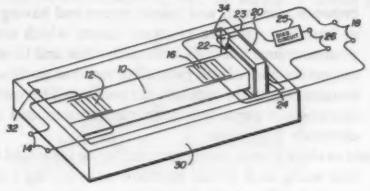
(a) a rigid housing;

(b) a surface acoustic wave device positioned within said housing and having a first edge thereof adjacent a first interior wall of said housing;

(c) an input transducer on a surface of said device, said input transducer connected to receive an input signal and apply the signal to the device;

(d) an output transducer positioned on said surface spaced apart from said input transducer, said output transducer for receiving said signal from said device and for generating an output signal therefrom;

(e) an electrostrictive element positioned within said housing



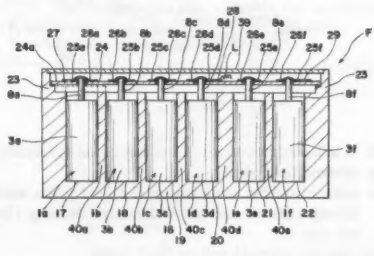
between a second edge of said device opposite said first edge and a second interior wall of said housing opposite said first interior wall; and

(f) means responsive to a control signal for applying an electric field to said electrostrictive element to alter the size thereof and thereby apply a mechanical force to said device to control the propagation time of said signal between said transducers.

4,342,972
MICROWAVE DEVICE EMPLOYING COAXIAL RESONATOR

Toshio Nishikawa, Nagaokakyo; Youhei Ishikawa; Sadahiro Tamura, both of Kyoto, and Haruo Matsumoto, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 1, 1980, Ser. No. 193,185
Claims priority, application Japan, Oct. 15, 1979, 54-133280
Int. Cl.³ H01P *1/202, 7/04, 1/213*
U.S. Cl. 333—206 **14 Claims**



1. A microwave device, comprising:

an electrically conductive housing means, said housing means being a casing member of a substantially parallelepiped configuration and having a plurality of cavities formed therein;

a plurality of resonator means equal in number to the number of said cavities, a different said resonator means being accommodated in each said cavity, each of said resonator means being mechanically secured to said housing means, each of said resonator means including a dielectric member having a bore therein, an outer conductor member disposed on the outer periphery of said dielectric member and electrically connected to said housing means, an inner conductor member disposed on the periphery of said bore of said dielectric member, and a terminal electrode member secured to and in direct electrical contact with said inner conductor member, one portion of said terminal

electrode member projecting from one end of said resonator means;

an input means for applying electrical signals to said microwave device;

an output means for removing electrical signal from said microwave device;

a coupling means for electrically coupling said input means, said resonator means and said output means, said coupling means including a dielectric coupling member connected between said input and output means and having thereon at least two coupling electrode layers which are spaced predetermined intervals from each other and to which the respective ones of said projecting terminal portions of said terminal electrode members are connected for establishing electrostatic capacitive coupling between said coupling electrode layers; and

said cavities of said casing member being separated by partition walls, each of said partition walls having a predetermined height which determines the band pass width of said microwave device.

4,342,973

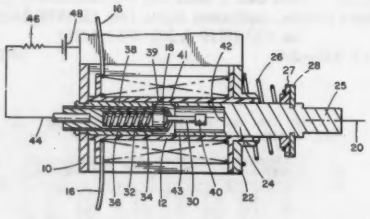
SOLENOID ANNUNCIATOR

Richard S. Stone, Palatine, and Morris Chercasky, Chicago, both of Ill., assignors to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed Aug. 25, 1980, Ser. No. 180,677

Int. Cl.³ H01H *47/00*; H01F *7/18*; G08B *21/00*

U.S. Cl. 335—2 **4 Claims**



1. A solenoid annunciator comprising, in combination;

a solenoid field piece;

a solenoid bobbin mounted on the field piece, said bobbin having a central passage, said passage defining a longitudinal axis;

an annular solenoid coil on the bobbin;

a movable core piece mounted in the passage for translation axially in response to flux in the coil; and

a contact mechanism projecting into the passage axially from one end of the bobbin, said contact mechanism being electrically insulated from the moveable core piece and projecting into the path of movement of the moveable core piece, said contact mechanism including lost motion means operative by engagement of the moveable core piece to provide continuous electrical contact with the moveable core piece upon coil actuation and travel of the core piece, said contact mechanism including a conductive plunger projecting axially toward the moveable core piece, electrically conductive biasing means acting on the plunger to bias the plunger toward the moveable core piece, and mounting means for supporting the biasing means and plunger, said conductive plunger being biased towards the moveable core piece.

4,342,974

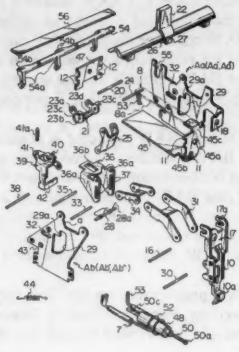
MULTIPOLAR TYPE CIRCUIT BREAKER

Kunimitsu Nakano, and Kunio Takemura, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Dec. 9, 1980, Ser. No. 214,712

Int. Cl.³ H01H *71/24*

U.S. Cl. 335—10 **9 Claims**



1. A multipolar type circuit breaker including a plurality of breaker element assemblies for alternating source current poles respectively comprising a fixed contactor having a fixed contact and connected to a source side terminal, a movable contactor supported movably between ON and OFF positions of its movable contactor with said fixed contact, a contact operating mechanism for changing over said movable contactor between said positions, and a trip mechanism interlinked with said operating mechanism to form a current path between the movable contactor and a load side terminal and including means which normally latches the movable contactor at its ON position but releases the latching upon incoming of an excessive current for forcibly tripping the movable contactor out of the ON position,

said assemblies respectively having a handle link pivoted at one end to a fixed handle supporting shaft and operably connected at the other end to said contact operating mechanism, the respective assemblies being housed in a single housing respectively with said handle supporting shaft and tripping means in alignment with each other, said handle link in each of the assemblies being directly operated by a single handle engaging directly with all the assemblies, and said tripping means in the respective assemblies being interlinked to each other by an interlinking rod engaged to the respective means for transmitting said forcible trip operation in either one of the assemblies synchronously with the means in the other assemblies,

said handle comprising a main shaft part extending within said housing transversely of said plurality of assemblies while engaging said handle supporting shaft and handle link in the respective assemblies to be axially rotatable about the handle supporting shaft, and a lever part extending from said main shaft part to the exterior of said housing, and said interlinking rod extends within the housing transversely of the assemblies and is supported axially rotatably, said interlinking rod being provided with a plurality of projections respectively engageable with said tripping means in the respective assemblies, said trip mechanism including an excessive current sensing means forming said current path, said tripping means comprising a latch link connected at one end to said contact operating mechanism and having at the other end a latch engaging part, said latch link being rotatably supported substantially at an intermediate position by a fixed shaft, and a tripping lever having at one end a first part engageable with said

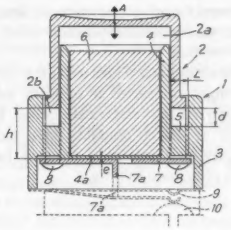
latch engaging part of said latch link for achieving a latch engagement therewith and at the other end a second part engageable with said sensing means, said tripping lever being rotatably supported substantially at the center about a fixed shaft normally biased toward engagement with the detecting means, said plurality of projections of said interlinking rod respectively comprising a pair of legs, a first one of which extending close to the latch engaging part of the latch link and a second one of which extending close to said first part of the tripping lever, such that a force imparted to either one of said first and second legs by a rotation of either one of the latch link and tripping lever causes the interlinking rod to be axially rotated.

4,342,975

MAGNETIC RETURN CONTROL KEY

Roger Charpentier, Bosquet Ay'mi, Avenue Beau Soleil, 64320 Idron, France

Filed Oct. 23, 1980, Ser. No. 199,865
Claims priority, application France, Oct. 31, 1979, 79 27077
Int. Cl.³ H01H *13/22, 3/12*
U.S. Cl. 335—205 **5 Claims**



1. Control key constituted by a fixed casing, a push-button mounted for sliding inside said casing between a first standing-out rest position and a second set-in work position, and magnetic means for returning the said push-button to its rest position, said means being constituted by a permanent magnet integral with the casing and by a plate of magnetic material integral with said push-button, wherein the said casing comprises a hollow centre part opened towards the top, and of which the bottom is at least partly closed by a wall of predetermined thickness, said centre part forming a housing for the said permanent magnet, whereas the said push-button is hollow on the inside so as to cap in slidable manner the said centre part, the depth of the hollow being greater than the height of the said centre part, and supports on its lower part the said plate of magnetic material, said latter closing off the hollow inside of the push-button beyond the bottom wall of the said centre part thus imprisoned in said hollow inside.

4,342,976

PULSE TRANSFORMER

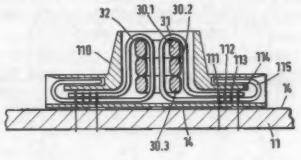
Heinrich Ryser, Schliern, Switzerland, assignor to Hasler AG, Bern, Switzerland

Filed Jan. 23, 1981, Ser. No. 228,155
Claims priority, application Switzerland, Feb. 1, 1980, 814/80
Int. Cl.³ H01F *15/04, 27/28*
U.S. Cl. 336—84 C **10 Claims**

1. A pulse transformer comprising at least a toroidal, seamlessly closed core (30, 30.1–30.3) and with primary (31) and secondary windings (32) wherein the turns of the windings (31,32) are constituted by elongated conductors (82–84, 90–93, 101–103) which are applied in side-by-side relationship to flexible, plate-shaped supports of insulating material (51,53,55,57,97), wherein the supports, including the conductors (82–84, 90–93, 101–103) are passed through the core (30, 30.1–30.3) and bent into the shape of a loop, and wherein the ends of the conductors (82–84, 90–93, 101–103) are electrically connected to one another,

each support consists of at least one layer of insulating material (51, 53, 55, 57, 97) bearing at least two layers of conductors (52, 54, 56, 90–93, 96, 101–103);

each conductor (52, 56, 82, 83, 84, 90–93, 96, 101–103) exhibits either at one end or at both of its ends connecting points (70; 88; 77, 79; 76, 80; 75, 81), by means of which the



conductors (52 . . .) can be electrically connected with one another and with other conductors;

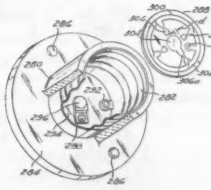
the conductors (82, 83, 84, 90–93, 101–103) with two connecting points are narrower than the conductors (52, 56, 96) with one connecting point and are arranged so that they are covered to a predominant part toward the outside by the conductors (52, 56, 96) with one connecting point and thus are electrically shielded thereby.

4,342,977

PRINTED CIRCUIT FUSE ASSEMBLY

James D. McGalliard, 11171 Fenwick Pl., Santa Ana, Calif. 92705

Division of Ser. No. 970,632, Dec. 18, 1978, Pat. No. 4,296,398.
This application May 28, 1981, Ser. No. 267,730
Int. Cl.³ H01H *85/02, 85/04*
U.S. Cl. 337—4 **16 Claims**



1. A fuse patch assembly for a printed circuit board and the like comprising:

a substrate;

first and second thin foil buses extending from the ends of said substrate;

a plurality of fuse elements integral with said first bus;

said second bus integral with at least one of said fuse elements, and closely juxtaposed the other of said fuse elements to form a narrow gap therebetween; and

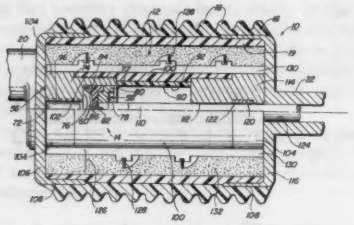
a cover forming an insulating layer over said substrate, said fuse elements and all but said extending portions of said first and second buses, said insulating layer having a small cut-out portion over each of said narrow gaps so that a substitute fuse is placed in circuit by applying solder to form a conductive bridge across the exposed gaps corresponding with said fuse element.

4,342,978

EXPLOSIVELY-ACTUATED SWITCH AND CURRENT LIMITING, HIGH VOLTAGE FUSE USING SAME

Otto Meister, Arlington Heights, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Mar. 19, 1979, Ser. No. 21,646
Int. Cl.[3] H01H *85/18, 33/06, 33/28*
U.S. Cl. 337—6 62 Claims



1. A high-voltage electrical switch for opening a current path in which the switch is included, comprising:

first and second normally electrically interconnected contact means for normally carrying current in the current path, the contact means being relatively movable apart along a fixed line of direction, movement of the contact means apart breaking the electrical interconnection therebetween to open the first current path;

piston means on the second contact means

(a) for defining an enclosed chamber with the first contact means when the contact means are interconnected

(b) for continuously isolating the second contact means from the chamber, and

(c) for constricting an arc formed between the contact means; and

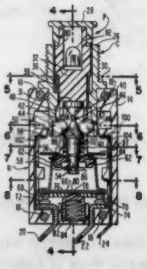
means for pressurizing the chamber to rapidly drive the contact means apart.

4,342,979

LIGHTED CIRCUIT BREAKER

Ernest L. Phillips, Denver, Colo., assignor to Jet Accessories, Inc., Denver, Colo.

Filed Jul. 14, 1980, Ser. No. 168,016
Int. Cl.[3] H01H *73/14*
U.S. Cl. 337—41 3 Claims



1. A push-pull circuit breaker for use in the control panel of an aircraft wherein the plunger of the circuit breaker becomes illuminated upon opening of the circuit, said circuit breaker comprising:

a housing;

a plunger longitudinally slideable within one end of the housing between an extended position and a retracted position, said plunger having a translucent first end which projects from said housing and a second end extending within said housing;

locking means within said housing for releasably holding said plunger in said retracted position;

a light within said first end of said plunger;

a pair of power leads extending from said housing;

a ground lead extending from said housing;

a first pair of spaced contacts within said housing electrically connected, respectively, to each of said power leads;

a bi-metal strip which is normally flat and extends across said first pair of contacts to close a power circuit through said circuit breaker, but which becomes bowed upon overheating due to an overload in the circuit;

a second pair of spaced contacts within said housing, one of said second contacts being electrically connected to one of said first contacts and the other of said second contacts being electrically connected to said ground lead;

support arms extending between said bi-metal strip and said locking means for holding said locking means in releasably locked condition during normal operation of said circuit and being moved to a released position upon overloading of the circuit by said bi-metal strip when said bi-metal strip becomes bowed;

first spring means urging said plunger from said retracted position to said extended position upon release by said support arms; and

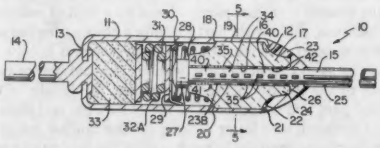
a pair of separate contact plates mounted on said second end of said plunger connected to opposite sides of said light and each moved into electrical contact with one of said second pair of spaced contacts upon movement of said plunger from said retracted position to said extended position to illuminate said light.

4,342,980

THERMALLY ACTUATABLE ELECTRICAL SWITCH CONSTRUCTION, CONDUCTIVE LEAD THEREFOR AND METHODS OF MAKING THE SAME

Ronald K. Kovacs, Kettering, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 5, 1981, Ser. No. 222,596
Int. Cl.[3] H01H *37/76*
U.S. Cl. 337—407 26 Claims



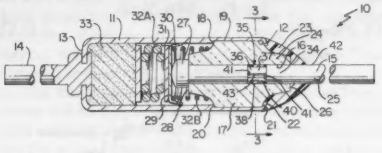
1. In a thermally actuatable electrical switch construction having a housing means carrying an electrically insulating end plug provided with an opening means passing therethrough and in which a portion of a conductive lead is disposed so that opposed ends of said lead extend beyond opposed ends of said plug and respectively define a fixed contact means inside said housing means and a terminal outside said housing means, said portion of said lead being retained in said opening means by a sealing means disposed in said opening means and extending around said portion of said lead and interlocking therewith to tend to prevent axial movement of said lead into said housing means as well as to tend to prevent rotational movement of said lead relative to said end plug, the improvement wherein said portion of said lead has a substantially unrecessed cylindrical peripheral surface throughout the entire length thereof and has a plurality of outwardly extending cog-like members that extend outwardly from said peripheral surface and interlock with said sealing means in said opening means of said end plug.

4,342,981

THERMALLY ACTUATABLE ELECTRICAL SWITCH CONSTRUCTION, CONDUCTIVE LEAD THEREFOR AND METHODS OF MAKING THE SAME

Charles Yagher, Jr., Kettering, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 5, 1981, Ser. No. 222,597
Int. Cl.³ H01H 37/76
U.S. Cl. 337—407 20 Claims



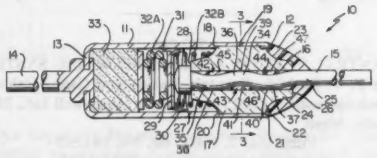
1. In a thermally actuatable electrical switch construction having a housing means carrying an electrically insulating end plug provided with an opening means passing therethrough and in which a portion of a conductive lead is disposed so that opposed ends of said lead extend beyond opposed ends of said plug and respectively define a fixed contact means inside said housing means and a terminal outside said housing means, said portion of said lead being retained in said opening means by a sealing means disposed in said opening means and extending around said portion of said lead and interlocking therewith to tend to prevent axial movement of said lead into said housing means as well as to tend to prevent rotational movement of said lead relative to said end plug, the improvement wherein said portion of said lead has a substantially cylindrical peripheral surface throughout the entire length thereof with an annular recess therein that defines an annular reduced section in said portion that has an annular peripheral surface disposed inboard of said cylindrical peripheral surface throughout its entire length and has at least one flat surface part thereof that interlocks with said sealing means in said opening means of said end plug.

4,342,982

THERMALLY ACTUATABLE ELECTRICAL SWITCH CONSTRUCTION, CONDUCTIVE LEAD THEREFOR AND METHOD OF MAKING THE SAME

Emil R. Plasko, Washington Township, Montgomery County, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 5, 1981, Ser. No. 222,598
Int. Cl.³ H01H 37/76
U.S. Cl. 337—407 10 Claims



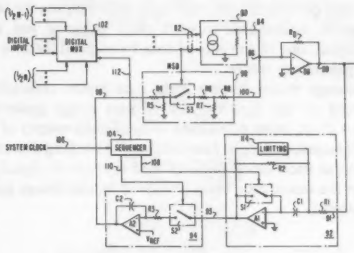
1. In a thermally actuatable electrical switch construction having a housing means carrying an electrically insulating end plug provided with an opening means passing therethrough and in which a portion of a conductive lead is disposed so that opposed ends of said lead extend beyond opposed ends of said plug and respectively define a fixed contact means inside said housing means and a terminal outside said housing means, said portion of said lead being retained in said opening means by a sealing means disposed in said opening means and extending around said portion of said lead and interlocking therewith to tend to prevent axial movement of said lead into said housing means as well as to tend to prevent rotational movement of said lead relative to said end plug, the improvement wherein said portion of said lead has a series of at least two convolutions therein that interlock with said sealing means in said opening means of said end plug, said opening means in said end plug defining an internal surface means of said end plug, said two convolutions respectively having apexes that respectively engage said internal surface means substantially on opposite sides thereof.

4,342,983

DYNAMICALLY CALIBRATED SUCCESSIVE RANGING A/D CONVERSION SYSTEM AND D/A CONVERTER FOR USE THEREIN

Benjamin F. Weigand, Catonsville, and John W. Frech, Baltimore, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 11, 1980, Ser. No. 176,625
Int. Cl.³ H03K 13/02
U.S. Cl. 340—347 CC 15 Claims



6. A digital-to-analog conversion system including apparatus for self-compensation of conversion inaccuracies, said system including:

a digital-to-analog converter circuit operative to convert a digitally coded input signal into an analog output signal representative thereof;

a first circuit responsive to said digitally coded input signal to add a compensating analog signal to said analog output signal to yield a compensated analog output signal;

a second circuit operative at predetermined times for causing said digitally coded input signal to switch between a predetermined pair of consecutive digital codes to render a corresponding transitional difference in said compensated analog output signal;

a time-gated amplifier circuit operative at said predetermined times for measuring said rendered transitional difference and generating an analog signal representative thereof; and

a time-gated integrating circuit for integrating said generated analog signal for a prespecified interval at said predetermined times to generate said compensating signal.

4,342,984

HIGH SPEED DIGITAL TO ANALOG CONVERTER CIRCUIT

Herbert Berke, Maitland, and John H. Allen, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 5, 1980, Ser. No. 213,529
Int. Cl.³ H03K 13/02
U.S. Cl. 340—347 DA 12 Claims

1. A high speed electronic data conversion circuit, comprising, in combination:

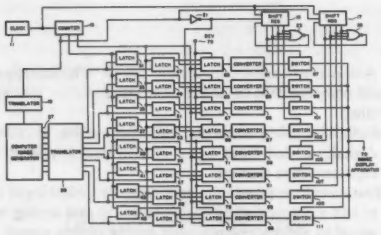
adjustable oscillating means having an output for generating a master clock signal having a series of clock pulses with the frequency thereof being variable over a predetermined frequency range;

counter means having a clock input connected to the output of said adjustable oscillating means, and first, second, third, and fourth outputs for generating first, second, third, and fourth clock signals, each of which has a series of clock pulses, the first of which has a frequency that is one-fourth that of said master clock signal, the second of which has a frequency that is one-fourth of said master clock signal and is 180° out of phase with the first clock signal thereof, the second of which has a frequency that is one-eighth that of said master clock signal, and the fourth of which has a frequency that is one-eighth that of said master clock signal and is 180° out of phase with the third clock signal thereof;

image generating means having a ready input effectively connected to the first output of said counter means and eight data outputs for producing, in response to each clock pulse of said first clock signal, a set of eight data bytes,

first storage means having eight data inputs effectively and respectively connected to the data outputs of said image generating means, a clock input connected to the third output of said counter means, and eight data outputs for latching therein, in response to each clock pulse of said third clock signal, one of the sets of data bytes produced by said image generating means;

second storage means having eight data inputs respectively connected to the data outputs of said image generating means, a clock input connected to the fourth output of said counter means, and eight data outputs for latching therein, in response to each clock pulse of said four clock signal, another of the sets of data bytes produced by said image generating means;



multiplexing means having a select input connected to the fourth output of said counter means, a clock input connected to the second output of said counter means, eight first data inputs respectively connected to the data outputs of said first storage means, eight second data inputs respectively connected to the data outputs of said second storage means, and eight data outputs adapted for alternately sampling the sets of data bytes latched in said first and second storage means in response to said fourth clock signal, and for latching therein, in respone to each clock pulse of said second clock signal, four data bytes of each set of data bytes sampled thereby;

translating means having eight data inputs respectively connected to the data outputs of said multiplexing means and eight data outputs for converting each set of eight data bytes sampled by said multiplexing means to a corresponding set of eight analog signals;

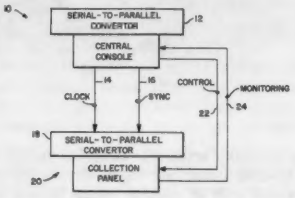
gating means having a clock input connected to the output of said adjustable oscillating means, a first reset input connected to the first output of said counter means, a second reset input connected to the second output of said counter means, eight data inputs respectively connected to the data outputs of said translating means, and an output for sequentially passing therethrough, in response to each clock pulse of said master clock signal, each analog signal of each set of analog signals converted by said translating means, with the four analog signals which correspond to the four data bytes latched within said multiplexing means being passed last in sequence thereby.

4,342,985

REMOTE SENSING AND CONTROL SYSTEM

Paul A. Desjardins, Commack, N.Y., assignor to Firecom, Inc., Woodside, N.Y.

Filed Oct. 3, 1980, Ser. No. 193,689
Int. Cl.³ G08B *26/00*
U.S. Cl. 340—525 **21 Claims**



1. A remote sensing and control system, comprising:

generator means producing a clock signal;

first serial to parallel converter means connected to receive said clock signal and producing a first plurality of parallel address signals;

display means connected to receive said first plurality of parallel address signals;

second serial to parallel converter means remotely located from said first serial to parallel means and connected to receive said clock signals for producing a second plurality of parallel address signals identical to said first plurality of parallel address signals;

a plurality of sensor means each having a preselected address and having an altered electrical states upon sensing a selected parameter or upon the occurrence of a malfunction of said sensor means;

sensor input means having inputs connected to each of said plurality of sensor means and being connected to receive said second plurality of parallel address signals, for interrogating a selected one of said plurality of sensor means upon the occurrence of the address of the selected sensor means at said sensor input means and for producing a monitoring signal indicating the state of said sensor means; and

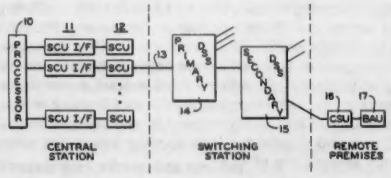
means feeding said monitoring signal to said display means for displaying the state of said sensor means during the occurrence of the address of the selected one of said plurality of sensor means.

4,342,986

CENTRAL STATION ALARM REPORTING SYSTEM

Allan F. V. Buskirk, Fountain Valley, and Gadi Moskovitch, Anaheim, both of Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 7, 1980, Ser. No. 147,689
Int. Cl.³ G08B *26/00*; H04Q *9/00*
U.S. Cl. 340—539 **48 Claims**



1. In a central station alarm reporting system having a cen-

tral station connected to at least one remote premises unit over a communication channel, said remote premises unit having means for providing at least two high frequency signals and at least two low frequency signals and having transmitting means for transmitting at least two bits of parallel digital information in a single transmission, said single transmission comprised of at least one of said low frequency signals and at least one of said highfrequency signals, said at least two low frequency signals, said at least two low frequency signals and said at least two high frequency signals having at least four combinations for single transmissions, said central station comprising:

receiving means for receiving said transmission from said remote premises unit; and,

decoding means having an input connected to said receiving means and having at least two output lines for providing at least a two bit digital word capable of completely describing the at least four combinations of said at least two low and at least two high frequency signals.

4,342,987

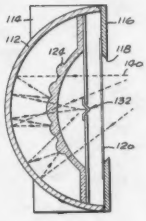
INTRUDER DETECTION SYSTEM

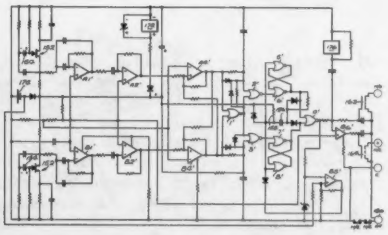
John A. Rossin, Goleta, Calif., assignor to Rossin Corporation, Goleta, Calif.

Continuation-in-part of Ser. No. 73,869, Sep. 10, 1979. This application Feb. 4, 1980, Ser. No. 117,957

Int. Cl.³ G01D *21/04;* **G08B** *13/18*

U.S. Cl. 340—567 **11 Claims**





1. An improved Intruder Detection System for optically monitoring an area and producing an alarm signal only in response to motion of an intruder across the monitored area, including:

(a) A sensor optically responsive to infrared radiation of an intruder, the sensor having at least a pair of discrete sensing areas each producing an electrical output in response to infrared radiation;

(b) Optical means directing infrared radiation from only the monitored area onto the discrete sensing areas of the sensor, radiation from only a portion of the monitored area being directed onto each sensor area, whereby movement of an intruder across the monitored area causes one then the other of the sensor areas of the pair to produce an electrical output;

(c) Means to direct visible light from one sensor area to another sensor area, said means including a V-shaped reflector, a planar member substantially transparent to visible light generally bisecting the V-shaped reflector, the sensor areas including sensor elements positioned on both face surfaces of the planar member located relative to one another such that visible light striking one sensor element passes through the planar member then strikes the other sensor element; and

(d) Electronic means for accepting and analyzing the electrical outputs of the sensor areas and producing an alarm signal only in response to the occurrence of an electrical output of one sensor area then of the other sensor area of a pair within a predetermined period of time.

4,342,988

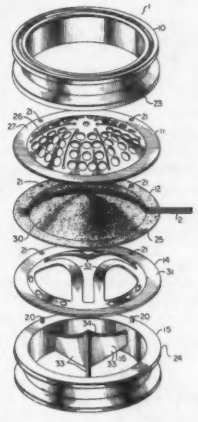
RUPTURE DISC ALARM SYSTEM

Leonard K. Thompson, Independence, and William H. Corbett, Grain Valley, both of Mo., assignors to Continental Disc Corporation, Riverside, Mo.

Filed Jan. 25, 1980, Ser. No. 115,261

Int. Cl.³ G08B *17/02;* **F16K** *17/14, 17/40*

U.S. Cl. 340—679 **15 Claims**



14. In combination:

(a) a rupture disc seal having opposed sides for blocking flow of fluid through a passageway until a differential pressure between said sides exceeds a predetermined level whereupon said seal ruptures; and

(b) a conduit having a pathway adapted for transmitting a signal from one end thereof to an opposite end thereof; said conduit being fixedly attached to said seal such that said pathway is broken and incapable of transmitting a signal when said seal ruptures; said conduit also being adapted to communicate with alarm means such that when said pathway is unbroken said signal is transmitted to said alarm means and when said pathway is broken said signal is not transmitted to said alarm means thereby activating said alarm means.

4,342,989

DUAL CRT CONTROL UNIT SYNCHRONIZATION SYSTEM

Richard R. Watkins, Chelmsford, Mass., and Richard A. Slater, Nashua, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 30, 1979, Ser. No. 34,833

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—723 **3 Claims**

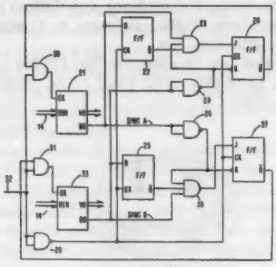
1. A logic control system for providing a binary information stream of characters to a video display system, wherein said

information stream may include both a data character byte and a visual attribute byte within same time periods of a system clock signal, which comprises:

(a) a pair of CRT control units having data character and visual attribute bytes stored therein, and responsive to said system clock signal and operable at said system clock signal rate for supplying said information stream to said video display system;

(b) first edge detector means for sensing during a leading half of a time period of said system clock signal a first synchronization signal supplied by a first of said pair of control units;

(c) a second edge detector means for sensing during said leading half of said time period a second synchronization signal supplied by a second of said pair of control units;



(d) first logic enable means responsive to said first edge detector means during a trailing half of said time period for disabling said first of said pair of control units if said first synchronization signal leads said second synchronization signal in phase, and enabling said first of said pair of control units if said first and said second synchronization signals are in phase; and

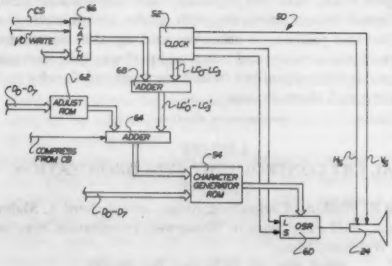
(e) second logic enable means responsive to said second edge detector means during a trailing half of said time period for disabling said second of said pair of control units if said second synchronization signal leads said first synchronization signal in phase, and enabling said second of said pair of control units if said first and said second synchronization signals are in phase.

4,342,990

VIDEO DISPLAY TERMINAL HAVING IMPROVED CHARACTER SHIFTING CIRCUITRY

Elden D. Traster, Garland, Tex., assignor to Harris Data Communications, Inc., Dallas, Tex.

Filed Aug. 3, 1979, Ser. No. 63,530
Int. Cl.³ G09G 1/16
U.S. Cl. 340—724 **12 Claims**



1. Apparatus for use in a line by line raster scanning character display system wherein stroke patterns for forming the characters to be displayed are stored in a font memory and are retrieved therefrom by addressing said font memory with character codes identifying the character to be displayed and line counts indicating which stroke of the character is to be displayed, where the line count normally remains unchanged during the scanning of each line of the raster, comprising:

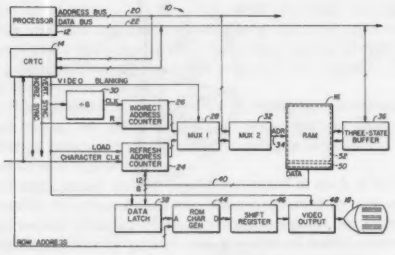
means responsive to said character codes for designating those characters which are to be displaced from their normal display location, and means for changing the line count from its normal value to one of a plurality of values in dependence upon said character codes when the character codes for the designated characters are presented to the font memory, whereby different strokes are retrieved from the font memory for the designated characters than for nondesignated characters at a displaced location relative to said nondesignated characters.

4,342,991

PARTIAL SCROLLING VIDEO GENERATOR

Richard N. Pope, San Ramon, and Richard A. Williamson, Danville, both of Calif., assignors to Multisonics, Inc., Dublin, Calif.

Filed Apr. 10, 1980, Ser. No. 128,347
Int. Cl.³ G09G 1/16
U.S. Cl. 340—726 **8 Claims**



1. A method for use in scrolling display rows in a raster scan type cathode ray tube display system wherein the display system includes a video display, refresh logic, a refresh memory, a first counter and a second counter, said refresh memory having storage locations arranged in a first matrix and a second matrix, said first matrix comprising storage for indirect address pointers of preselected base address locations for rows of said second matrix, said second matrix comprising fixed address storage for data to be presented for output to said video display, said method comprising the steps of:

(a) writing a base address pointer for each row into said first matrix;

(b) reading, according to an address value in said first counter, a base address pointer from a location in said first matrix which points to the base address of a row in said second matrix so as to supply the base address to the address input of said refresh memory; thereupon

(c) reading for output to said video display, according to a value in said second counter containing the current column address, data in said second matrix at the current column and row address;

(d) incrementing said second counter containing the current column and row address to advance the column address;

(e) repeating steps (c) and (d) until the end of the row is serviced;

(f) incrementing said first counter to access a next sequential address in said first matrix;

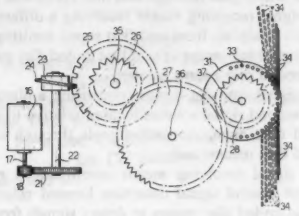
(g) repeating steps (b) through (f) to present a plurality of rows of data in said second matrix to said video display.

4,342,992

TELEINDICATOR FOR INFORMATION BOARDS

Vittorio Bozzini, Via Tolmino 50/16, 10141 Torino, Italy

Filed Jul. 22, 1980, Ser. No. 171,094
Claims priority, application Italy, Jul. 25, 1979, 68551 A/79
Int. Cl.[3] G08B 5/14
U.S. Cl. 340—764 7 Claims



1. A teleindicator for information boards, comprising in combination, first means for the registration of input signals relating to an indication which has to be displayed by the said teleindicator, second arranged to process the signals from the said first means and arranged to control third means which actuate, in a mechanical way, the display of the said indication, by means of indicator elements,

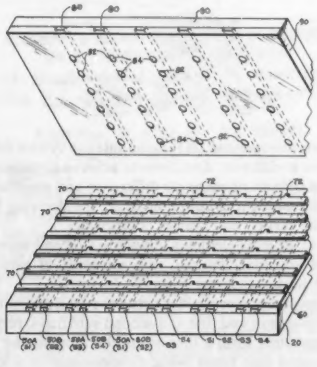
said third means comprising an electric motor and transmission mechanism for the transmission of the motion from the said motor to the said indicator means, characterized in that the said transmission mechanism comprise a mechanical transmission coupling periodically inactive while the electric motor is running, for the interruption of the transmission of the motion from the said motor to the said indicator elements, the said periodically inactive transmission coupling comprising an endless screw coupled to a gear, the profile of the said endless screw being such as to produce a rotation of the said gear only when corresponding to a section of the said profile.

4,342,993

MEMORY DISPLAY PANEL

George E. Holz, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 65,399, Aug. 9, 1979, which is a continuation of Ser. No. 928,996, Jul. 28, 1978. This application Feb. 12, 1981, Ser. No. 233,731
Int. Cl.[3] G09G 3/28
U.S. Cl. 340—779 10 Claims



1. A display panel comprising

a gas-filled envelope made up of a base plate and a face plate hermetically sealed together with a space between them and with a gas filling in said space,

a plurality of parallel first electrode in said envelope insulated from said gas and adapted to have A.C. signals applied thereto to produce visible glow, and

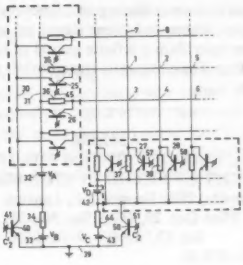
a plurality of second and third electrodes disposed in said envelope in contact with said gas and adapted to produce cathode glow when D.C. operating potentials are applied to selected ones thereof, the cathode glow produced by said selected electrodes facilitating the generation of visible glow between the adjacent ones of said first electrodes having A.C. signals applied thereto.

4,342,994

DISPLAY DEVICE HAVING A LIQUID CRYSTAL

Jean H. J. Lorteije, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 12, 1981, Ser. No. 273,281
Claims priority, application Netherlands, Jul. 8, 1980, 8003930
Int. Cl.[3] G06F 3/14
U.S. Cl. 340—784 7 Claims



1. A display device having a liquid crystal, the display device comprising a display screen having a plurality of display elements each having a first and a second electrode, these display elements having been divided in at least two groups, the first electrodes of a group of display elements being interconnected by means of one selection conductor per group and the second electrodes of sets of corresponding display elements of the different groups being interconnected by means of corresponding excitation conductors, the display device further comprising a control circuit having a plurality of row selection switches for selecting in cyclic sequence the groups of display elements during always one row selection period and having a plurality of excitation switches for exciting the display elements of a selected group, a first voltage source for the row selection switches and a second voltage source for the excitation switches, characterized in that a terminal of the first voltage source is coupled to a ground connection of the control circuit by means of an auxiliary supply source for producing a periodically pulsating direct voltage, the ratio between one period of the pulsating direct voltage and one row selection period being a rational number.

4,342,995

DATA NETWORK EMPLOYING A SINGLE TRANSMISSION BUS FOR OVERLAPPING DATA TRANSMISSION AND ACKNOWLEDGMENT SIGNALS

George T. Shima, Kamakura, Japan, assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 15, 1980, Ser. No. 187,591
Int. Cl.[3] H04Q 9/00
U.S. Cl. 340—825.5 7 Claims

1. A network of stations for data transmissions therebetween, said network comprising:

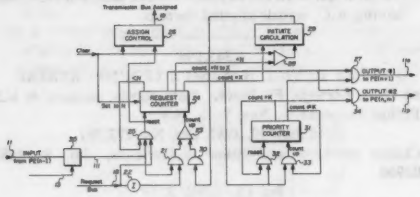
a single transmission bus;

a plurality of stations coupled to said bus, each station hav-

ing a bus assignment control pulse receiving and transmitting means;

a bus assignment control line coupled to each of said stations in a serial manner;

each station including a request counter means to count to a given count and, if said each station does not request access to said bus, to signal said pulse receiving and transmitting means to transmit said bus assignment control pulse to said next succeeding station; and



a transmission acknowledgment line coupled to each of said stations;

each of said stations including an acknowledgment means to receive an acknowledgment signal on said acknowledgment line only during a finite period of time after each of said stations has completed transmission on said transmission bus.

4,342,996

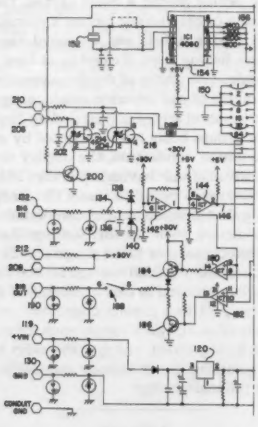
TWO DISC ENCODER SYSTEM FOR MONITORING HEIGHT OF LIQUID IN STORAGE TANK

Louis J. Jannotta, 2800 Bernice Rd., Lansing, Ill. 60438

Filed Oct. 29, 1980, Ser. No. 201,805

Int. Cl.³ G08C *19/16, 9/06*

U.S. Cl. 340—870.16 **16 Claims**



1. An apparatus for monitoring the height of liquid in a liquid storage tank, said storage tank being equipped with a height gage including a gage shaft rotatable in response to changes in the height of said liquid in said storage tank, said apparatus comprising:

instrument shaft means capable of being associated with said gage to rotate in response to the rotation of said gage shaft;

a first coded disc means associated with said instrument shaft means and rotatable in response to the rotation of said instrument shaft means;

a second coded disc means associated with said first coded disc means and rotatable in response to the rotation of said first coded disc means;

first signal emitting means comprising a plurality of distinct first signal sources located relative to said first coded disc means to emit signals through said first coded disc means;

first signal receiving means comprising a plurality of distinct first signal detectors located relative to said first coded disc means to detect signals from said first signal emitting means which pass through said first coded disc means, said first signal receiving means receiving a different, distinct pattern of signals from said first signal emitting means for each radial increment of said first coded disc means as said first coded disc means rotates;

second signal emitting means comprising a plurality of distinct second signal sources located relative to said second coded disc means to emit signals through said second coded disc means; and

second signal receiving means comprising a plurality of distinct second signal detectors located relative to said second coded disc means to detect signals from said second signal emitting means which pass through said second coded disc means, said second signal receiving means receiving a distinct, different pattern of signals from said second signal emitting means for each radial increment of said second coded disc means as said second coded disc means rotates, wherein the patterns of signals received by said first and second signal receiving means are translatable into the absolute height of said liquid in said liquid storage tank over at least a portion of the total height of said tank.

4,342,997

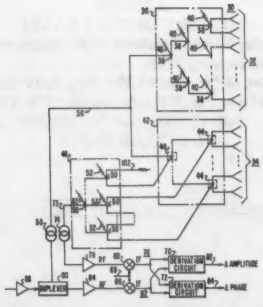
ARRAY MODIFICATION THAT ADDS HEIGHT CAPABILITY TO A 2D ARRAY RADAR

Gary E. Evans, Trappe, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 3, 1980, Ser. No. 165,830

Int. Cl.³ G01S *3/46*

U.S. Cl. 343—16 R **10 Claims**



1. A two-dimensional (2D) radar antenna system for forming two beams in different directions to achieve illumination characteristics of both phase angle difference and amplitude difference with respect to a common target for deriving the elevation of said target, said system comprising:

an array of antenna elements including first and second subarrays of antenna elements, said elements of said first and second subarrays being mutually exclusive;

first and second power divider networks for distributing illuminating power in said first and second subarrays, respectively, to compositely form a first beam, the illuminating power of said formed first beam being concentrated at a location in said first subarray of antenna elements;

a first receiving channel driven commonly by both the first and second power divider networks;

a third power divider network, coupled to said second power divider network, for distributing illuminating power in said second subarray of antenna elements to form a second beam in a direction different from that of said first beam, the illuminating power of said formed second beam being concentrated at a location in said second subarray of antenna elements; and

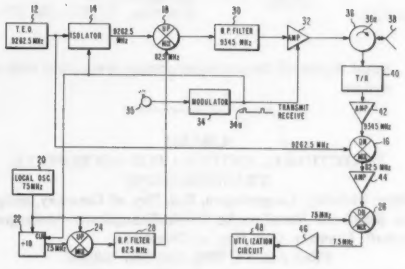
a second receiving channel driven by the third power divider network.

4,342,998

PULSED RADIO FREQUENCY TRANSMITTING AND RECEIVING SYSTEM

Finis C. Easter, Canoga Park, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 4, 1980, Ser. No. 212,861
Int. Cl.³ G01S *7/28*
U.S. Cl. 343—17.1 R **6 Claims**



1. A radio frequency transmitter-receiver for alternately periodically transmitting pulses of frequency F_1 and for receiving return echo signals of frequency F_1 comprising, in combination:

first means continuously generating a signal of frequency F_2;

second means generating a signal of frequency F_3 only during the transmission of pulses of frequency F_1;

third means responsive to signals generated by said first means and second means, when present, to generate frequency F_1; and

fourth means responsive to said return signal and first means signal for producing a signal of intermediate frequency F_3 at a time that those signals are not generated in the transmitter-receiver, whereby interference by the generated signals is avoided.

4,342,999

LOOP ANTENNA ARRANGEMENTS FOR INCLUSION IN A TELEVISION RECEIVER

Oakley M. Woodward, and John G. N. Henderson, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1980, Ser. No. 210,251
Int. Cl.³ H01Q *1/24, 1/26*
U.S. Cl. 343—702 **28 Claims**

1. An antenna arrangement for inclusion within a cabinet of a receiver including a tuner and operable over selected frequency bands comprising:

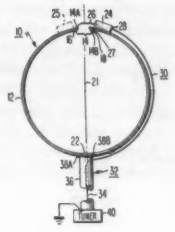
a loop of electrically conductive material, having at least one gap, said gap forming respective first and second feed terminals, said loop having at least one neutral point thereon at which a potential equal to the average of potentials at said first and second feed terminals is developed when electromagnetic radiation impinges upon said loop;

circuit means having input and common terminals for receiving an input signal therebetween, and having an output terminal for supplying an output signal responsive to said input signal, said circuit means being located proximate to said gap and including

means for respectively coupling said input and common terminals to the first and second feed terminals of said gap,

tuning circuitry connected between said input and common terminals for tuning said loop over at least a portion of said selected frequency bands, and

means for coupling signals from said tuning circuitry to said output terminal, said signal coupling means isolating said



tuning circuitry for making said tuning circuitry substantially unaffected by an impedance at said output terminal; and

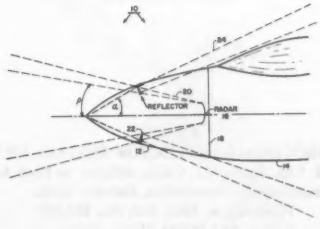
a transmission line having a conductor connected to said output terminal for receiving said output signal and for coupling said output signal to said tuner, said transmission line conductor being disposed along the periphery of said loop between said output terminal and said neutral point and departing from said loop proximate to said neutral point.

4,343,000

AIRCRAFT SELF-PROTECTION RADAR

John C. Macidull, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,617
Int. Cl.³ H01Q *1/28*
U.S. Cl. 343—705 **6 Claims**



1. A combination forward and aft-looking airborne radar antenna apparatus comprising a forward aerodynamic housing;

a forward-looking aircraft antenna in said housing for producing a forwardly projecting pattern of energy waves;

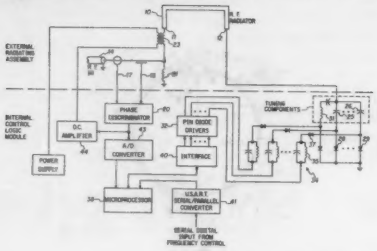
reflecting means in said housing arranged to intercept a peripheral portion of said energy wave and reflect said waves in a rearward direction.

4,343,001

DIGITALLY TUNED ELECTRICALLY SMALL ANTENNA

Mardis V. Anderson, Richardson; Leslie V. Griffee; William H. Grona, both of Dallas, and Richard D. Leverington, Plano, all of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 24, 1980, Ser. No. 200,345
Int. Cl.³ H01Q *9/26, 1/28*
U.S. Cl. 343—745 **5 Claims**



1. An antenna system suitable for airborne use, of the type having a blade forming a folded monopole antenna with a first terminal serving as a radio frequency input and a second terminal connectable to tuning apparatus, the improvement comprising:

tuning components, switchable to various values, connected at said second terminal;

means, responsive to the selection of a frequency to be used, for computing, from stored reference values, the values of tuning components calculated to render said antenna substantially in tune at the frequency selected to be used, and for switching said tuning components to said calculated values;

means at said first terminal for detecting the extent to which the antenna is in tune at said selected frequency;

means, responsive to an indication from said means for detecting that said antenna is substantially out of tune at said selected frequency, for switching said tuning components until new values are reached for which the antenna is substantially in tune: and

means, responsive to said new tuning component values, for computing and storing new reference values.

4,343,002

PARABOLOIDAL REFLECTOR SPATIAL FILTER

Howard H. Luh, Sunnyvale, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

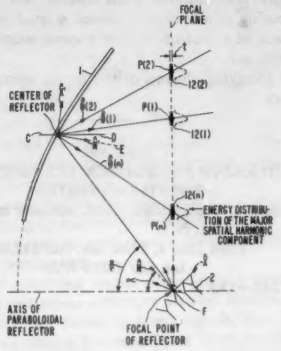
Filed Sep. 8, 1980, Ser. No. 185,084
Int. Cl.³ H01Q *15/10, 19/12*
U.S. Cl. 343—753 **8 Claims**

1. An antenna system comprising:

a paraboloidal surface capable of reflecting electromagnetic radiation;

a feed array having a plurality of substantially identical radiation-directing feed elements pointed at said surface; and

a spatial filter separate from the surface and the feed array, situated in the focal plane of said surface, for reducing the amplitudes of spatial sinusoidal perturbations in the main


FOCAL PLANE
CENTER OF REFLECTOR
ENERGY DISTRIBUTION OF THE MAJOR SPATIAL HARMONIC COMPONENT
AXIS OF PARABOLOIDAL REFLECTOR
FOCAL POINT OF REFLECTOR

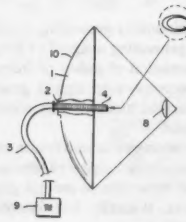
beam region of the radiation pattern associated with said system.

4,343,003

DIRECTIONAL ANTENNA FOR MICROWAVE TRANSMISSIONS

Günter Möhring, Langenhagen, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,431
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939697
Int. Cl.³ H01Q *19/19*
U.S. Cl. 343—781 P **5 Claims**



1. In a directional antenna for microwave transmissions comprising a paraboloidal main reflector, a first waveguide comprising a waveguide feed having an elliptical cross-section and having a first end with an energizer thereat, said first end having an open end operatively irradiatingly directed relative to said main reflector, and a second waveguide serially communicatingly connected between a second end of said waveguide feed and a transceiver device, the improvement in cooperative combination therewith wherein:

said elliptical cross-section of said waveguide feed completely throughout said waveguide feed and at said first end is constant and is dimensioned such that said waveguide feed at said first end simultaneously alone itself forms said energizer forming an eliptical aperture at said open end having the same cross-section as said elliptical cross-section of said waveguide feed, the energizer constituting means for completely being in irradiation communication with the entire said main reflector with respect to frequencies being transmitted,

said second waveguide is formed completely throughout

with the exact same dimensions and elliptical cross-section of said waveguide feed,

said waveguide feed and said second waveguide respectively comprises a transversely corrugated, longitudinally seam welded metallic tubular member,

said waveguide feed further comprises reinforcing tapes wound about said metallic tubular member thereof, and

said waveguide feed and said second waveguide have oversized cross-sectional dimensions with respect to the frequencies to be transmitted for an overmoded electromagnetic wave transmission.

4,343,004

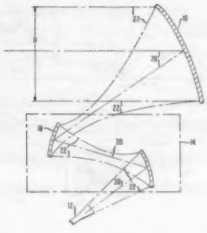
BROADBAND ASTIGMATIC FEED ARRANGEMENT FOR AN ANTENNA

Edward A. Ohm, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1980, Ser. No. 209,944

Int. Cl.³ H01Q *19/19, 19/195*

U.S. Cl. 343—781 P **2 Claims**



1. A broadband antenna system capable of correcting for astigmatism in a beam (22) which is either radiated or received by the antenna system, the antenna comprising:

a main focusing reflector arrangement (10);

a feed arrangement (12) disposed to permit either one of the radiation of the beam in a particular direction and the reception of the beam from a particular direction along a feed axis (20) of the antenna system; and

astigmatic correction means (14) disposed to reflect the beam propagating in either direction along the feed axis of the beam between the feed arrangement and the the main focusing reflector arrangement

characterized in that

the astigmatic correction means comprises:

a first doubly-curved reflector (18) disposed between the feed arrangement and the main focusing reflector arrangement along the feed axis of the beam comprising a radius of curvature in two orthogonal planes according to the relationships

$$r_1(\perp) = 2f_1(\perp)\cos\theta \text{ and } r_1(\parallel) = \frac{2f_1(\parallel)}{\cos\theta}$$

where $r_1(\parallel)$ is the radius of curvature of said first reflector in the plane of incidence, $r_1(\perp)$ is the radius of curvature of said first reflector perpendicular to the plane of incidence, θ is the angle of incidence to the beam in either of the associated principal planes, and f_1 is the focal length of the first reflector in the associated principal plane as defined by $(1/f_1)=(1/R_3)+(1/R_5)$ where R_3 is the phase front radius at said first reflector in the associated principal plane and R_5 is the phase front radius of the beam reflected from said first reflector in the associated principal plane; and

a second doubly-curved reflector (16) disposed between the feed arrangement and said first doubly-curved reflector comprising a radius of curvature in two orthogonal planes according to the relationships

$$r_2(\perp) = 2f_2(\perp)\cos\theta \text{ and } r_2(\parallel) = \frac{2f_2(\parallel)}{\cos\theta}$$

where $r_2(\parallel)$ is the radius of curvature of said second reflector in the plane of incidence, $r_2(\perp)$ is the radius of curvature of said second reflector perpendicular to the plane of incidence, θ is the angle of incidence of the beam in either of the associated principal planes, and f_2 is the focal length of the second reflector as defined by $(1/f_2)=(1/R_7)+(1/R_9)$ where R_7 is the phase front radius of the beam incident on the second reflector in the associated principal plane and R_9 is the phase front radius of the feed in the associated principal plane, and the first and second reflectors are spaced apart a distance such that $\Delta\phi(\perp)-\Delta\phi(\parallel)$ is approximately zero degrees where each of $\Delta\phi(\perp)$ and $\Delta\phi(\parallel)$ in the plane of interest is defined by

$$\Delta\phi = 180\frac{\Delta z_4}{\lambda}\left(\frac{w_1}{R_1}\right)^2 \text{ degrees,}$$

where Δz_4 is the longitudinal distance between the beam-waist location of the main focusing reflector and the beam-waist location provided by the broadband astigmatic feed arrangement, λ is the wavelength of the signal in the beam, w_1 is the spot size radius at a reflector of the main focusing reflector arrangement immediately after the first reflector along the feed axis of the beam, and R_1 is the phase front radius at the same reflector of the main focusing reflector where w_1 is determined.

4,343,005

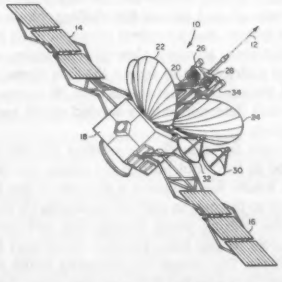
MICROWAVE ANTENNA SYSTEM HAVING ENHANCED BAND WIDTH AND REDUCED CROSS-POLARIZATION

Ching C. Han, Los Altos; Herman W. Bilenko, Santa Clara, and Yeongming Hwang, Los Altos, all of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Dec. 29, 1980, Ser. No. 220,558

Int. Cl.³ H01Q *19/14*

U.S. Cl. 343—781 P **15 Claims**



1. A microwave antenna system for producing when energized by a source of microwave signals, first and second simultaneously propagating beams of microwave radiation, said first beam being of left-hand circularly polarized radiation, said second beam being of right-hand circularly polarized radiation, comprising in combination:

a curvilinear microwave-reflective surface defining a focal region within which parallel beams of microwave electro-

magnetic radiation impinging on said surface are brought to focus;

and disposed within said focal region, a microwave feed array, said feed array comprising a plurality of waveguide feed elements disposed mutually adjacent to one another and commonly aligned to propagate microwave energy toward, and receive microwave energy from said reflective surface, each of said waveguide feed elements comprising a circular waveguide terminating in a circular aperture facing toward said reflective surface;

and disposed about each of said circular apertures, inductive tuning means to selectively reduce mutual coupling between said adjacent feed elements, and to minimize cross-polarization between adjacent feed elements, whereby adjacent feed elements can be energized with signals of alternate polarization sense while substantially avoiding cross-polarization;

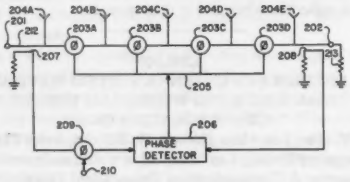
said inductive tuning means comprising an inductive stub of generally U-shape, including a first leg, a second leg spaced from said first leg and generally parallel thereto, and a root portion extending between and interconnecting said first and second legs, at least one of said legs being of trapezoidal shape, having a greater width near the portion thereof adjacent said root portion and a lesser width at a tip portion thereof.

4,343,006

HIGH ACCURACY FEEDBACK CONTROL SYSTEM FOR A PHASED ARRAY ANTENNA

Peter J. McVeigh, Hauppauge, and Ronald M. Rudish, Commack, both of N.Y., assignors to Eaton Corporation, Cleveland, Ohio

Filed Aug. 28, 1980, Ser. No. 182,166
Int. Cl.³ H01Q 3/26
U.S. Cl. 343—854 **6 Claims**



1. Apparatus for accurately controlling the pointing direction of a phased array antenna, comprising:

(a) means for distributing a first signal to a plurality of antenna elements in series, said means for distributing having an input and an output port,

(b) a plurality of first means for shifting phase of the first signal, each of said means for shifting phase having an input, an output and a control port and each being positioned between antenna elements in series along said means for distributing to accept the first signal at its input port and transmit the first signal from its output port with a phase shift determined by a second signal applied to its control port,

(c) first means for sampling a portion of the first signal connected to the input port of the means for distributing,

(d) second means for sampling a portion of the first signal connected to the output port of the means for distributing,

(e) means for sensing phase having first and second input ports and an output port, the first input port being connected to the first means for sampling while the second output port is connected to the second means for sampling to accept and determine the phase difference between the samples of the first signal and produce at the output port of the means for sensing phase the second signal indicating the phase difference of the sampled signals, said second signal being applied to control the phase shift of the plurality of first means for shifting the phase, and

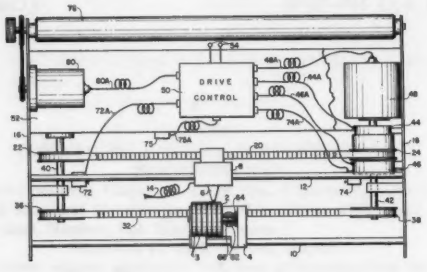
(f) second means for shifting phase designated the reference phase shifting means having an input port and output port and a control port, the second means for shifting the phase connected in series between one of the means for sampling and the means for sensing the phase to shift the phase of one of the sampled signals in accordance with a third signal designated the command signal which indicates the desired total phase shift of the plurality of first means for shifting phase, said command signal being applied to the control port of the reference phase shifting means to set its phase and the total phase of the plurality of means for shifting phase by way of the means for sensing phase.

4,343,007

MULTI-COLOR MULTI-POINT RECORDER

Robert H. Teague, Red Hill, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 26, 1980, Ser. No. 191,248
Int. Cl.³ G01D 9/32
U.S. Cl. 346—46 **12 Claims**



1. A recording mechanism for a multi-point recorder having a recording medium comprising

a first carriage means linearly movable with respect to a recording line on said recording medium,

a recording head means mounted on said first carriage means,

a second carriage means linearly movable with respect to said recording line on said recording medium and located on the other side of said recording medium from said first carriage means,

a multi-color ink cartridge means mounted on said second carriage means and

drive means having a single drive motor for concurrently moving said first carriage means and said second carriage means across said recording medium and for separately moving said second carriage mean with respect to said first carriage means to provide a selective orientation of said print head means and said ink cartridge means to select a recording ink color.

4,343,008

METHOD FOR CREATING MAGNETIC MASTERS

J. Kirk Swigert, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 28, 1980, Ser. No. 172,588
Int. Cl.³ G11B 5/00
U.S. Cl. 346—74.2 **6 Claims**

1. A method of magnetic imaging which comprises,

(1) providing a magnetic master which is prepared by pre-magnitizing a magnetizable recording member at a spatial magnetization wavelength of between about 20 microns and about 120 microns,

(2) causing characters to be formed on the backing layer of the recording member with suitable marking means,

(3) exposing the backing layer of the recording member to a flash energy source having an energy of at least about 2.6×10^6 ergs/cm^2, wherein background areas on the

backing layer are de-magnetized thereby resulting in the formation of a latent magnetic image on the recording member,

(4) contacting the latent magnetic image with a magnetic toner causing development thereof,

(5) followed by transferring the developed image to a receiving surface, and subsequently repeatedly developing the magnetic latent image contained on the recording member, resulting in the production of numerous developed images, wherein the recording member is comprised of a transparent substrate containing a magnetizable material therein, which becomes paramagnetic upon exposure to said flash energy source.

4,343,009

FACSIMILE RECORDER

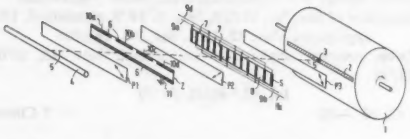
Felix Lutz, Stuttgart; Gerhard Seibold, Remseck; Gerhard Wessel, Stuttgart, and Joachim Lauckner, Korntal, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 7, 1981, Ser. No. 261,295

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018452

Int. Cl.³ G01D *15/14*

U.S. Cl. 346—108 **11 Claims**



1. A recorder for recording image information line by line on a record medium comprising means for generating light flux, a controllable optical component responsive to said light flux and having means associated therewith for forming a plurality of spot elements from which spots of light are directed onto said record medium along the length of a recording line, the plurality of spot elements formed by said controllable optical component being combined in n groups of $m>1$ spot elements each, the m spot elements of a group forming a partial line, and means for energizing the individual partial lines successively in time, the m spot elements being energized simultaneously, the unenergized respective n-1 partial lines blocking the light flux incident thereon.

4,343,010

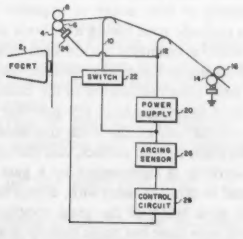
RECORDER CONTROL CIRCUIT FOR SUPPRESSING INCIPIENT ARCING AT THE HEATING ELECTRODES

Richard W. Denny, Littleton, and Paul A. Diddens, Denver, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 12, 1981, Ser. No. 242,968

Int. Cl.³ G01D *3/08*

U.S. Cl. 346—110 R **8 Claims**



1. In a recording system wherein latent images on a recording medium are developed by the application of heat to said recording medium and wherein said heat is generated by the passage of electrical energy through a conductive backing on said record medium and between two or more electrode means contacting said conductive backing, the improvement comprising a control circuit for controlling the passage of said electrical energy through said conductive backing on the occurrence of an impending loss of contact between said backing and one or more of said electrodes means, said control circuit comprising:

power supply means connected for energizing said electrode means;

switch means connected between said power supply means and said electrode means;

sensing means connected to said power supply means to sense incipient electrical arcing between one or more of said electrode means and said backing, and to provide a first signal indicative of said incipient arcing;

control means connected to said sensing means to be responsive to said first signal to produce a control signal; and

means connecting said control means to said switch means to open said switch means in response to said control signal.

4,343,011

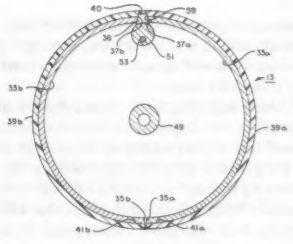
FACSIMILE APPARATUS

Thomas M. Murray, 7117 Wood Hollow, Austin, Tex. 78731, and Lloyd G. Richardson, Austin, Tex., assignors to Thomas M. Murray, Austin, Tex.

Filed Mar. 17, 1980, Ser. No. 131,163

Int. Cl.³ G01D *15/28;* B41F *13/10, 21/00;* B60B *9/00*

U.S. Cl. 346—138 **3 Claims**



1. In a facsimile system, the improvement comprising:

a generally cylindrical rotatably driven drum having expansion means for increasing the diameter of the drum from a reduced diameter position for receiving a closed loop of copy medium, to an enlarged diameter position for securing the copy medium to the drum for rotation therewith, to record transmitted signals on the copy medium;

the drum being cantilevered from one end to allow the closed loop of copy medium to be inserted over the drum from the other end;

the expansion means comprising two semi-cylindrical drum segments, each having first and second edges parallel with its axis, the two segments being juxtaposed to define a cylindrical configuration;

retention means for retaining the first edges together and fur urging the second edges toward each other; and

wedging means for selectively forcing the second edges apart from each other to expand the diameter of the cylindrical configuration;

the retention means comprising a pair of plates, one mounted on each end of the juxtaposed segments, each segment being pinned to each of the plates at a single point adjacent its first edge to urge the segments together; and

the wedging means comprising an eccentric rod rotatably mounted between the plates adjacent the second edges, and a wedge mounted between the second edges, and in

contact with the rod so that rotation of the rod forces the wedge radially outward to force the second edges apart.

4,343,012

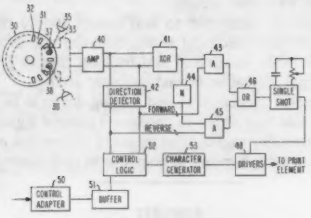
PRINTER CONTROL CIRCUIT

Robert F. Knapp, Friendsville, Pa., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,223

Int. Cl.³ G01D *15/24*

U.S. Cl. 346—139 R **6 Claims**



1. In a printer having a recording medium supported on a platen and a carrier with energizable print elements thereon movable along said platen for recording data serially on a print line, the combination comprising:

drive means for moving said carrier along said platen to advance said print elements from one print position to another;

timing means connected to said drive means movable in synchronism with said carrier comprising a disk of alternate transparent and opaque sectors in a band of constant radius about said disk;

sensing means including light source means and a pair of tansducers fixedy disposed on opposite sides of said disk with said transducers each generating as an output waveform a succession of pulses representing the quantity of light passing through said sectors as said disk moves, said transducers being spaced from each other along said band to provide their respective output pulses in phase quadrature; and

circuit means for combining the two successions of said pulses to produce an output timing signal for enabling said print elements at the leading and trailing edges of each of the pulses in only one of said successions of pulses as said disk moves in one direction.

4,343,013

NOZZLE PLATE FOR INK JET PRINT HEAD

Leonhard Bader, Stadtbergen; Frank Giessner, Augsburg; Friedrich B. Rombach, Augsburg, and Hermann Winter, Augsburg, all of Fed. Rep. of Germany, assignors to NCR Corporation, Dayton, Ohio

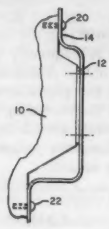
Filed Oct. 14, 1980, Ser. No. 196,408

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **2 Claims**

1. A nozzle plate for an ink jet print head comprising a thin, elongated glass substrate of ink wettable material, one side of said substrate having a surface suitable for ink adherence thereto, a

plurality of substantially cylindrically-shaped nozzles formed in columnar manner to provide ink adhering surfaces through said substrate and equally spaced one from another, and a layer of ink resistant chromic material on the surface of the other side of said substrate and adjacent the orifice of each



nozzle to prevent deposits of ink from adhering thereabout.

4,343,014

LIGHT-IGNITABLE THYRISTOR WITH ANODE-BASE DUCT PORTION EXTENDING ON CATHODE SURFACE BETWEEN THYRISTOR PORTIONS

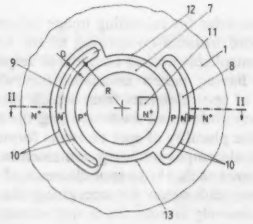
Andre Jaecklin, Ennetbaden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

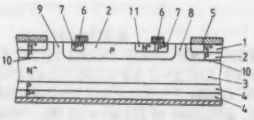
Continuation of Ser. No. 91,829, Nov. 6, 1979, abandoned. This application Mar. 12, 1981, Ser. No. 243,146

Claims priority, application Switzerland, Nov. 15, 1978, 11725/78

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **7 Claims**





1. A light-ignitable thyristor formed of a main thyristor and an auxiliary thyristor integrated with said main thyristor on a common semiconductor wafer for ignition boosting of said main thyristor, said integrated main and auxiliary thyristors each consisting of four zones of opposite conductivity type including a cathode zone facing a cathode side surface, a cathode base zone, a common anode base zone and a common anode zone facing an anode side surface, respectively, wherein the anode base zone reaches up to the cathode side surface in a narrow duct forming a duct PN junction with said cathode base zone on the side of the main thyristor cathode zone exposed to the cathode side surface, and the cathode zone of said auxiliary thyristor is surrounded by a gate zone of the main thyristor and in contact therewith, comprising:

said gate zone being of the same conductivity type as said cathode base zone but more heavily doped than the latter;

means for concentrating current from said gate zone to said cathode zone to raise the ignition sensitivity of said main

thyristor, comprising said narrow duct of said anode base zone having a cathode side surface area formed between the gate zone and the cathode zone of the main thyristor; and

said cathode side surface area of said anode base zone duct having a width D selected such that a narrow space charge zone is at least partially maintained around the duct PN junction throughout the ignition of said main thyristor.

4,343,015

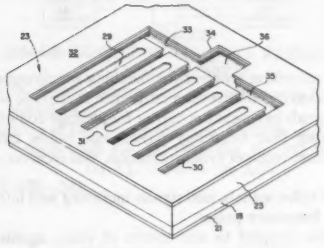
VERTICAL CHANNEL FIELD EFFECT TRANSISTOR

Bantval J. Baliga, and James R. Shealy, both of Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 14, 1980, Ser. No. 149,936

Int. Cl.³ G01L *29/06*

U.S. Cl. 357—55 **12 Claims**



1. An improved vertical channel field effect transistor comprising:

first and second semiconductor layers of the same conductivity type gallium arsenide;

a high resistivity, semi-insulating isolation region extending at least partly through said first semiconductor layer;

the surface of said first layer having a row of parallel trapezoidal grooves connected together at one end by a transversely extending groove which surround on three sides a plurality of upstanding elongated semiconductor fingers that individually have an isosceles trapezoid cross section with a wide base at the top and an interior narrow base, the other end of every trapezoidal finger intersecting said high resistivity region, and a channel region at and adjacent to each narrow base which extends from wall to wall of the trapezoidal finger;

a gate region within said grooves surrounding each upstanding trapezoidal finger on three sides, and a gate contact pad making interconnection to all of said gate regions;

first metallizations on the surfaces of said trapezoidal fingers which are all interconnected with another contact pad on said high resistivity region, and a second metallization on the opposing surface of said second semiconductor layer, one of said first and second metallizations being the source contact and the other the drain contact.

4,343,016

VIDEO CODING SYSTEM FOR MAIL SHIPMENTS

Gerhard Goldkuhle, Constance, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

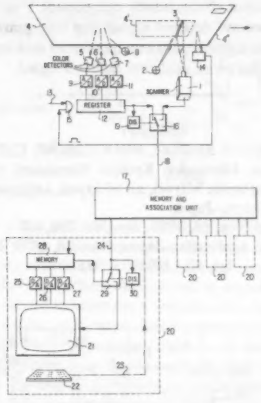
Filed Oct. 31, 1980, Ser. No. 202,729

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944144

Int. Cl.³ H04N *7/18, 9/02*

U.S. Cl. 358—1 **5 Claims**

1. In a video coding system for mail including a scanning means for generating a video signal without color information by point-by-point scanning of the address field of an item of mail passing by on a conveying path, and a plurality of video coding stations each including a monitor responsive to a received said video signal for visually displaying a selected address field so that an operator, on the basis of visual perception, can punch the distribution information associated with the displayed address into a keyboard; the improvement wherein: each of said monitors is a video receiver with a screen on which color reproduction can be varied by means of a received color control signal; first means are provided for generating a color control signal for each change of picture with said color control signal being associated with the new address field for the duration of the display of same, said first means for generating a color control signal includes a color detection means of low optical resolution disposed in the region of said scanning means for providing an output signal which constitutes said color control signal and which contains the color information corresponding to the color of the passing item of mail; and second means are provided for supplying said color control signal to the color control input of said monitor, said second means includes transmission and switching circuit means for feeding said color control signal to said monitors in the correct time association with the respective address fields to be displayed.



4,343,017

DECODING COMPOSITE PAL TELEVISION SIGNALS

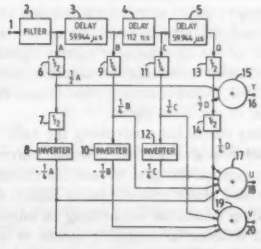
James H. Wilkinson, Tadley near Basingstoke, England, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,862

Claims priority, application United Kingdom, Jan. 30, 1980, 8003084

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—24 **10 Claims**



1. A method of decoding a composite PAL television signal comprising the steps of:

deriving from an input PAL television signal first, second and third delayed signals delayed respectively by one horizontal line scan period minus one quarter of a period of the color sub-carrier signal, one horizontal line scan period plus one quarter of a period of the color sub-carrier and two horizontal line scan periods respectively;

deriving an output luminance component Y as one half of said input signal plus one half of said third delayed signal;

deriving an output chrominance component U as one quarter of said first delayed signal plus one quarter of said third delayed signal minus one quarter of said input signal minus one quarter of said second delayed signal; and

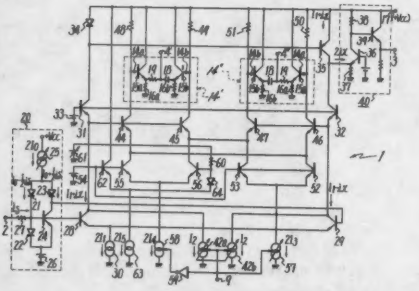
deriving an output chrominance component V as one quarter of said second delayed signal plus one quarter of said third delayed signal minus one quarter of said input signal minus one quarter of said first delayed signal.

4,343,018

CHROMINANCE SIGNAL PROCESSING CIRCUIT

Tsutomu Nilmura, Hiratsuka; Kyoichi Murakami, Chigasaki, and Akira Yamakoshi, Miyori, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 19, 1980, Ser. No. 208,193
Claims priority, application Japan, Nov. 26, 1979, 54/153193
Int. Cl.³ H04N 9/535
U.S. Cl. 358—28 **8 Claims**



1. A chrominance signal processing circuit for generating a gain-controlled chrominance carrier signal and a phase-controlled burst signal, comprising:

first differential amplifier means supplied with a chrominance carrier signal and a burst signal in respective intervals and having a first constant current source;

second differential amplifier means supplied with an output signal of said first differential amplifier means;

phase control circuit means connected to outputs of said second differential amplifier means for providing therefrom said gain-controlled chrominance carrier signal and said phase-controlled burst signal;

a second constant current source for supplying a bias current to said second differential amplifier means during each said interval of the chrominance carrier signal;

a third constant current source for supplying a bias current to said second differential amplifier means during each said interval of the burst signal;

gain controlling means for controlling the ratio of the currents of said first and second constant current sources, whereby to control the gain of said chrominance carrier signal from said phase control circuit means; and

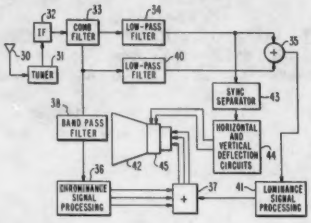
phase controlling means for controlling an output signal of said second differential amplifier means at least during each said interval of the burst signal, whereby to control the phase of the burst signal from said phase control circuit means.

4,343,019

APPARATUS FOR REDUCING THE EFFECT OF CO-CHANNEL INTERFERENCE ON SYNCHRONIZING PULSES

William A. Lagoni, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 16, 1981, Ser. No. 225,772
Int. Cl.³ H04N 9/535, 5/08
U.S. Cl. 358—31 **2 Claims**



1. A color television receiver for reducing synchronization disruption caused by co-channel interference of the type where co-channel signals having offset carrier frequencies combine to form interfering beat frequency pulses, said pulses causing disruption of said receiver synchronization, said receiver comprising:

a source of video signals, said signals including said interfering beat frequency pulses;

a comb filter coupled to said source of video signals and having a first output for producing a luminance information signal having a frequency response exhibiting signal components at regularly spaced spectral locations and having a second output for producing a chrominance information signal having a frequency response exhibiting signal components at regularly spaced spectral locations different from said luminance signal components, said luminance information signal exhibiting a reduction in the amplitude of said interfering beat frequency pulses; and

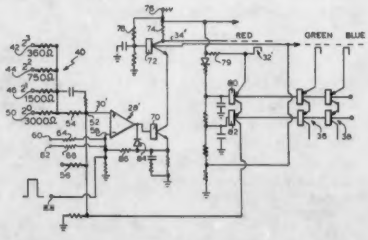
a synchronizing separator coupled to said first output of said comb filter for deriving a synchronizing signal from said luminance information signal, said synchronizing signal being substantially free of interference from said interfering beat frequency pulses.

4,343,020

OMNISPECTRAVISION

John J. Stapleton, East Brunswick, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 6, 1980, Ser. No. 157,136
Int. Cl.³ H04N 9/02
U.S. Cl. 358—81 **28 Claims**



1. A method of producing a color image on a visual color display based upon multispectral or multi-sensor data pertaining to the image, including the steps of:

(a) transforming said data into data signals utilizable by the display in image production on a respective picture element by picture element basis;
(b) coding the data signals to correspond to particular tristimulus values for the respective picture elements which are weighted to facilitate color discrimination in the display; and
(c) utilizing these coded signals simultaneously in the display to produce respective color picture elements to produce the image.

4,343,021

IMAGE SENSOR SENSITIVITY VARIATION COMPENSATOR

Wayne W. Frame, Longmont, Colo., assignor to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 68,468, Aug. 21, 1979, abandoned. This application Jun. 11, 1981, Ser. No. 273,102
Int. Cl.³ H04N *5/30, 5/21*
U.S. Cl. 358—213 **43 Claims**

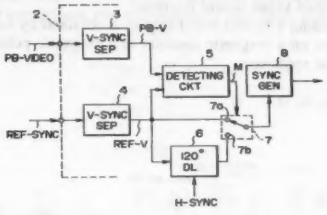
1. A method of compensating for sensitivity variations in an image sensing device, said image sensing device including a plurality of detection elements, said method comprising the steps of:
determining the sensitivity variation in each of said detection elements;
storing a correction value for each detection element related to said variation in a memory;
retrieving each correction value from said memory;
converting each said correction value to analog form; and
altering an analog signal related to the image sensed in each of said detection elements by the corresponding correction value, thus producing corrected video data, said altering step further including the step of scaling the analog form of said correction value so that the maximum correction value capable of being stored in said memory corresponds to the maximum deviation in sensitivity of said image sensing device.

4,343,022

APPARATUS FOR PRODUCING A PHASE-SYNCHRONIZED REFERENCE SIGNAL IN A VIDEO SIGNAL REPRODUCING SYSTEM

Shosuke Tanaka, and Mitsushige Tatami, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,894
Claims priority, application Japan, Jul. 18, 1979, 54-91074
Int. Cl.³ H04N *5/795*
U.S. Cl. 360—36 **13 Claims**



1. For use in a video signal reproducing system of the type including a video signal reproducing device having first and second rotary reproducing transducers for reproducing video signals, including vertical synchronizing signals, from record tracks on a record medium, said transducers exhibiting a predetermined angular separation therebetween, said device also having means for producing a reference synchronizing signal in phase synchronism with the vertical synchronizing signal reproduced by said first transducer, and a utilization means coupled to said video signal reproducing device, apparatus for producing a substantially phase synchronized reference synchronizing signal, regardless of the particular transducer which is used to reproduce said video signals, for use by said utilization means, comprising switch means having first and second inputs and an output coupled to said utilization means; means for supplying said reference synchronizing signal to said first input; delay means for delaying said reference synchronizing signal by an amount corresponding to said predetermined angular separation between said transducers to apply a delayed reference synchronizing signal to said second input; and switch control means including detecting means for detecting the phase relationship between a vertical synchronizing signal then reproduced by a transducer and said reference synchronizing signal for producing a switch control signal as a function of the detected phase relationship and means for supplying said switch control signal to said switch means to select the particular switch input to which the output thereof is coupled and thereby select the delayed or undelayed reference synchronizing signal for application to said utilization means.

4,343,023

MAGNETIC RECORDING AND REPRODUCTION OF DIGITAL INFORMATION

Kazutoshi Nishimura, Tokorozawa, and Tadashi Hirono, Sayama, both of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,623
Claims priority, application Japan, Oct. 27, 1979, 54-139036
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—40 **13 Claims**

1. A method of magnetically recording and reproducing a digital informations comprising the steps of:
preparing a conversion table in which data words each comprising a plurality of (m) bits correspond to respective record words each having n bits (n>m) and in which an integrated value of NRZI recording current becomes zero, or two record words each including n bits and in which the integrated value of NRZI recording current is

not zero and polarities of said two record words are opposite;

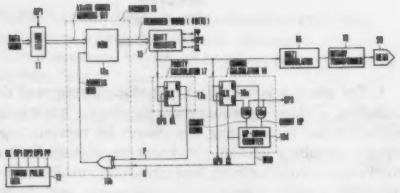
partitioning an original information bit sequence into data words at every m bits;

converting the data words into record words when the former correspond to record words in said conversion table;

when one of said data words corresponds to two record words in said conversion table, converting one of said record words into a record word such that, in accordance with the integrated value of the NIRZI recording current up to a conversion point, an absolute value of said integrated value would decrease;

recording a record word sequence obtained by said conversion on a magnetic medium as a magnetic polarity inversion sequence

$a_0, a_1, a_2, \ldots a_i$



where ai represents by 1 or −1 a magnetic inversion in which two N poles oppose each other or two S poles oppose each other, and by 0 a magnetic polarity noninversion and i represents a position in said magnetic polarity inversion sequence;

reading said magnetic polarity inversion sequence out of said magnetic medium converting read out informations into a 3 valued detected digit sequence of class 1 partial response type expressed by

$b_0, b_1, b_2, \ldots b_j \ldots$

where $b_j = a_{j-1} + a_j$

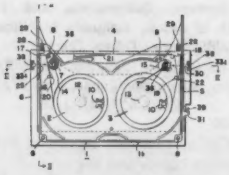
converting said detected digit sequence into m bit data words at every n digits; and reproducing the m bit data words.

4,343,024

DEVICE FOR DETECTING TAPE END OF MAGNETIC RECORDING APPARATUS

Tsutomu Kawai, 28, Ogawa-cho, Yokosuka-shi, Kanagawa-ken, Japan

Filed May 8, 1980, Ser. No. 147,832
Int. Cl.³ G11B *15/00*
U.S. Cl. 360—74.6 **4 Claims**



1. In a device for detecting a transparent portion of a normally opaque magnetic tape carried on a pair of reels arranged side by side within a cassette having openings in the bottom for positioning the cassette and an opening along one side to allow removal of an intermediate length of tape during operation and end openings in horizontal alignment with the plane of the tape, said cassette being initially supported on a tiltable receiving plate which is lowered downwardly to be supported on a fixed base plate when the cassette is in use, both of said plates being provided with openings to accomodate cassette reel driving shafts and cassette positioning poles, the combination comprising:

a unitary assembly comprising a generally U-shaped member having embedded in the upper portions of the respective upstanding legs thereof a light source, and light sensor to be responsive to the direct radiation from said light source;

the intermediate portion of said member being an elongated flat section to lie against the under side of said base plate;

one of said upstanding legs having an upwardly and inwardly tapering circular cross-section defining a positioning pole for a cassette to project upwardly through aligned openings in said plates;

the other of said upstanding legs to be disposed closely adjacent the exterior of one end of a cassette at the location of an end opening;

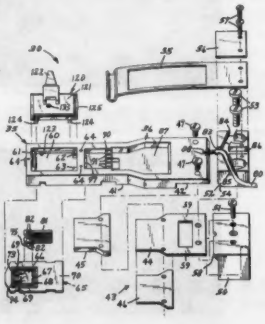
said light source being positioned when said flat section lies against the under side of the base plate to project radiation in a path to pass through the end opening of the cassette to be directly received by the light sensor after being intercepted by the tape.

4,343,025

TRANSDUCER ARM ASSEMBLY FOR FLOPPY DISK

Leonard E. Kronfeld, Minneapolis; Thomas J. Winkler, Isanti, and Ricky J. Madsen, Crystal, all of Minn., assignors to Nortronics Company, Inc., Minneapolis, Minn.

Filed Oct. 5, 1979, Ser. No. 82,236
Int. Cl.³ G11B *5/54, 5/48, 21/16, 5/22*
U.S. Cl. 360—104 **5 Claims**



1. A transducer arm assembly for use in data transfer with both sides of a double sided floppy disk, comprising, in combination:

an elongated body portion having first and second opposite faces and having an aperture therethrough near a first end thereof between said faces;

hinge means at the second end of said body portion for connecting said portion to a support member;

a substantially planar flexure member having an apertured central portion and including means for enabling pivotal movement of said central portion about mutually perpendicular axes normally lying in the plane of said member;

a transducer mounted on said flexure member to project in part through apertures therein;

means securing said flexure member to one face of said arm to extend across said aperture therein; and

a cover and means for removably positioning it in said aperture of said body portion at the second face thereof, said

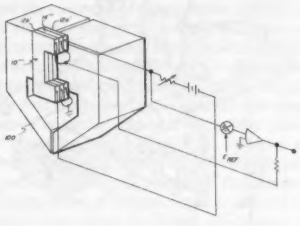
cover including a pivot member positioned to project into said aperture to engage said flexure member at the point of intersection of said axes.

4,343,026

MAGNETORESISTIVE HEAD EMPLOYING FIELD FEEDBACK

Neil J. Griffith, San Diego; Fredrick J. Jeffers, Escondido, and Ward M. Calaway, Sierra Madre, all of Calif., assignors to Spin Physics, Inc., San Diego, Calif.

Filed Jul. 9, 1980, Ser. No. 167,162
Int. Cl.³ G11B *5/12, 5/30*
U.S. Cl. 360—113 **7 Claims**



1. Magnetoresistive apparatus for producing an electrical signal that is the analog of a magnetically recorded signal comprising

(a) magnetoresistive lamina means cooperative with said magnetically recorded signal,

(b) electrically conductive lamina means proximate said magnetoresistive lamina means and so disposed with respect thereto that a field about said electrically conductive lamina means bucks the field associated with said magnetically recorded signal,

(c) means cooperative with said magnetoresistive lamina means for producing and applying a current to said electrically conductive lamina means which is in proportion to the field applied to said magnetoresistive lamina means by said magnetically recorded signal, thereby to cause said magnetoresistive lamina means to see virtually no resultant field, and

(d) means adapted to receive the current applied to said electrically conductive lamina means for developing a signal voltage corresponding to said current, said signal voltage being the analog of said magnetically recorded signal,

whereby since virtually no resultant field is applied to said magnetoresistive lamina means (1) the dynamic range of said apparatus is optimal and (2) noise and signal distortion of said signal voltage are minimal,

said magnetoresistive lamina means being a thin magnetic film, and said apparatus including (1) means for passing sense current through and in the plane of said film, and (2) means for biasing the easy axis of the film to an angle that is acute with respect to the direction of current flow through the film.

4,343,027

COMMON SUSPENSION MULTI-LINE GROUNDING PROTECTIVE RELAY

Takaaki Kai, Zushi, Japan, assignor to Kabushiki Kaisha Meidensha, Japan

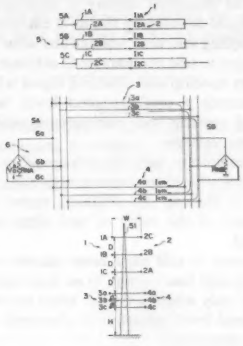
Filed May 23, 1980, Ser. No. 152,760
Claims priority, application Japan, May 29, 1979, 54/67184
Int. Cl.³ H02H *3/16*
U.S. Cl. 361—42 **19 Claims**

1. A common suspension grounding protective relay, comprising:

current detector means for detecting the currents in at least three phases of a high voltage parallel transmission lines and for outputting the inter-line differential currents between each two phases of said at least three phases;

filter means inputting said inter-line differential current between each two phases of a power transmission circuit from said current detector means and for eliminating from the inter-line differential current of said each pair of phases the positive phase component;

first calculating means for calculating the zero phase component from the inter-line differential currents detected by said current detector means and for calculating the ratio of the magnitudes and the phase difference between said zero phase component and the output of said filter means;



second calculating means for calculating the zero phase circulation current in a grounding fault by calculating the vector product of the output of said filter means and the ratio of the magnitudes and phase difference derived by said first calculating means;

grounded phase detector means for carrying out detection of the phase which is grounded;

first selection means for selecting a derivation result from said second calculating means according to the phase which is grounded; and

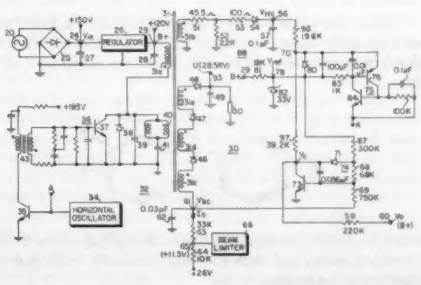
zero phase current selection means for selecting the zero phase circulation current from said second calculating means by said first selection means.

4,343,028

TELEVISION RECEIVER HIGH VOLTAGE GENERATOR PROTECTION CIRCUIT

James E. Hicks, New Palestine, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1981, Ser. No. 226,580
Int. Cl.³ H02H *3/20*
U.S. Cl. 361—91 **14 Claims**



1. A protection circuit for a television display requiring an

ultor voltage and drawing ultor beam current from an ultor terminal, comprising:

a high voltage generator responsive to an alternating voltage for developing said ultor voltage at said ultor terminal;

means responsive to said ultor voltage for developing a sense voltage representative thereof;

means responsive to said ultor beam current for developing a sense voltage representative thereof;

a comparator;

means coupled to said comparator for developing a disabling signal when energized by said comparator;

means coupled to said disabling signal developing means for applying said disabling signal to said television display such that an abnormal display is produced when said disabling signal developing means is energized;

means for coupling said ultor voltage and ultor beam current sense voltages to said comparator to activate said comparator so as to develop said disabling signal when said ultor voltage exceeds a predetermined level, said predetermined level varying with variations in said ultor beam current sense voltage;

a source of bias voltage, said bias voltage when applied to an input terminal of said comparator activating said comparator so as to develop said disabling signal in substantial independence of the value of said ultor voltage sense voltage; and

means responsive to said ultor beam current sense voltage for applying said bias voltage to an input terminal of said comparator only when said ultor beam current exceeds a predetermined level indicative of abnormal high voltage generator operation.

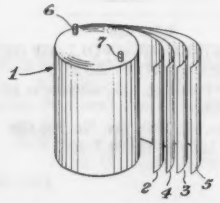
4,343,029
ELECTRICAL DEVICE CONTAINING AN ARYL SULFIDE DIELECTRIC LIQUID

James M. Renga, and Albert H. Emmons, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

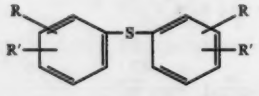
Continuation-in-part of Ser. No. 78,318, Sep. 24, 1979, abandoned. This application Sep. 16, 1980, Ser. No. 187,689

Int. Cl.³ H01B *3/22*; H01G *4/04*

U.S. Cl. 361—315 **16 Claims**



1. In an electrical device containing a dielectric liquid as the impregnating agent, the improvement wherein the dielectric liquid consists essentially of at least one compound of the formula



wherein each R is independently an alkyl group of one to about 20 carbon atoms and each R′ is independently hydrogen or an alkyl group as defined for R.

5. A capacitor according to claim 1, said capacitor comprising a plurality of alternately spaced apart electrode foil sheets and separator sheets, said sheets having said dielectric liquid between them.

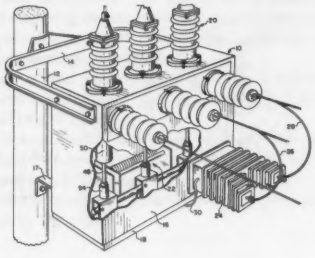
4,343,030
LOAD BREAK SWITCH

K. Henry Date, and Ronald Wainio, both of South Milwaukee, Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Division of Ser. No. 940,104, Sep. 6, 1978, Pat. No. 4,293,834. This application Feb. 4, 1981, Ser. No. 231,279

Int. Cl.³ H02B *1/04*

U.S. Cl. 361—335 **5 Claims**



1. A high voltage load break switch assembly which comprises:

a switch housing;

at least one vacuum interrupter and bushing assembly which includes

first and second high voltage insulating bushings, each having opposite end surfaces which define a bushing axis and also define a passage of circular cross-section extending concentrically therethrough along the insulating bushing axis, each insulating bushing being affixed at one end to the switch housing so that the axis of the first insulating bushing is orthagonal to, and coplanar with, the axis of the second insulating bushing, each insulating bushing carrying an electrically conductive end terminal at an opposite end closing one end of the passage through the insulating bushing,

a current exchange assembly which includes an annular shaped electrically conductive housing concentrically disposed about the axis of the first insulating bushing, carrying spring loaded contact members therein for making sliding contact with an electrically conductive rod extending through the annular housing along the axis of the first bushing, the current exchange assembly also includes an electrically conductive bushing rod, concentrically disposed within the passage of the second insulating bushing along the axis of the second bushing, having one end connected to the end terminal of the second insulating bushing and an opposite end affixed to the outer periphery of the current exchange conductive housing,

a current exchange insulating housing, having three portions integrally joined and formed about the outer periphery of the current exchange current exchange conductive housing, the first portion of the insulating housing being concentrically formed about the bushing rod and extending from the current exchange conductive housing into the passage of the second insulating bushing, the second portion of the current exchange insulating housing being shaped generally as a hollow cylindrical portion open at both ends and extending from the current exchange conductive housing concentrically about the axis of the first insulating bushing into the passage of the first insulating bushing, and the third portion of the current exchange insulating housing being shaped generally as hollow cylindrical portion

open at both ends and extending from the current exchange conductive housing concentrically about the axis of the first bushing in an opposite direction from that of the second portion of the current exchange insulating housing,

mounting means for affixing the current exchange insulating housing to the switch housing,

a vacuum interrupter, having a stationary electrically conducting contact rod extending from one end of the vacuum interrupter and a movable electrically conducting contact rod extending from an opposite end of the vacuum interrupter which define an axis of the vacuum interrupter, the two contact rods having adjacent inner ends within the vacuum interrupter and outer ends, the movable contact rod being movable along the axis of the vacuum interrupter between a closed position where the inner end of the movable contact rod engages with the inner end of the stationary contact rod and an open position where the inner ends of the contact rods are disengaged and separated by a suitable distance, the stationary contact rod being affixed to the end terminal of the first insulating bushing so that the vacuum interrupter is coaxially disposed within the passage of the first insulating bushing, and the opposite end of the vacuum interrupter extends telescopically into the hollow cylindrical second portion of the current exchange insulating housing, and the movable contact rod extends through the current exchange conductive housing in sliding contact with the spring loaded contact members therein into the hollow cylindrical third portion of the current exchange insulating housing, and

an insulating rod, which extends along the axis of the vacuum interrupter and the first insulating bushing, which has one end affixed to the outer end of the moving contact rod of the vacuum interrupter within the cylindrical hollow third portion of the current exchange insulating housing; and

switch operating means, mounted within the switch housing and connected to the opposite end of the insulating rod, for moving the insulating rod along its axis between a closed position and an opened position, to thus open and close the vacuum interrupter.

4,343,031

HEADLIGHT ADJUSTING DEVICE FOR VEHICLES

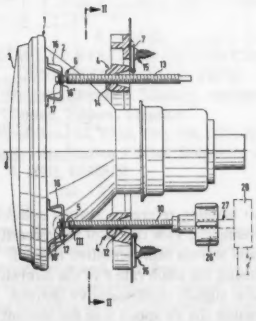
Klaus Liebegott, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,922

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2825976

Int. Cl.³ B60Q *1/00*

U.S. Cl. 362—80 **7 Claims**



1. A headlight adjusting device for a vehicle such as an automobile, comprising adjusting screws respectively arranged between one bearing at the vehicle and/or at a supporting frame mounted to the vehicle and one bearing associated with the headlight, said adjusting screws being secured in position without axial and transverse play in one of said bearings and held axially in fixed position and transversely in a movable position in the other of said bearings in that these other bearings holding said adjusting screws axially in fixed position and transversely in a movable position include elongate, slotted holes which receive said adjusting screws and permit transverse movement thereof during adjustment of said headlight, respective elastic elements in the form of spring clips being arranged between these other bearings and said adjusting screws to eliminate axial play between these other bearings and the adjusting screws while permitting transverse movement of the adjusting screws within the elongate, slotted holes of these other bearings during adjustment of said headlight.

4,343,032

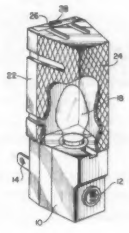
LIGHT SENSITIVE ELECTRICAL DEVICE

Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Jul. 10, 1978, Ser. No. 923,057

Int. Cl.³ F21V *23/04*

U.S. Cl. 362—276 **3 Claims**



1. A portable light-sensitive electrical device capable of being used with and movable between one or more of a number of spaced existing conventional electrical receptacles of the type normally found mounted in walls, or the like, comprising in combination: a housing having front, rear, side, top and bottom wall portions, an electrical circuit carried within said housing, blade means electrically connected to said circuit with portions thereof extending from said housing for removably matingly engaging and being physically mounted to contacts of an electrical receptacle, lamp-receiving socket means electrically cooperative with said circuit and whose substantially sole source of current is from said receptacle, and light-sensitive means carried by said housing and disposed so as to be able to receive ambient light for controlling current flow from one of said receptacle contacts to said socket means, allowing more current flow to said socket means as ambient light received by said light-sensitive means decreases and lesser current flow to said socket means as said received light increases, said device being characterized by the absence of need for a power source other than that to which it is connected and wherein said housing does not cover the receptacle openings and surrounding receptacle portions of the unused receptacle of a duplex receptacle to which the device is connected, said light sensitive means including a photo conductive cell, said device including an electric light bulb with portions thereof mounted in said socket and a shade of predetermined shape and appearance, said shade comprising front and side wall portions, said front wall portion having a generally planar surface extending between generally rectangular edges including longer vertically extending edges and relatively shorter horizontally extending edges, said side wall portions extending in a diverging manner generally symmetrically at a predetermined angle

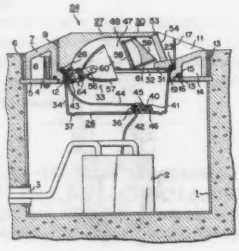
greater than 90 degrees away from said front wall portion toward a rearward plane of said housing, said shade being formed with at said front wall portion with a generally polygonal-shaped pattern extending over substantially the entire front wall portion, said shade further comprising bottom means capable of being swung inwardly to frictionally engage and disengage in a snap-on manner and be mounted to said housing in a position with respect to said housing illustrated in FIG. 1 of the drawing, said shade engagement and disengagement with said housing facilitating repeated replacement of said bulb.

4,343,033

MARKER LIGHT

Kiyoshi Suzuki, Yokohama, Japan, assignor to Toshiba Electric Equipment Corporation, Tokyo, Japan

Filed Feb. 22, 1980, Ser. No. 123,694
Int. Cl.³ F21V *7/12, 19/02*
U.S. Cl. 362—307 **6 Claims**



1. A marker light comprising:

a housing adapted to be embedded in or adjacent a runway, and having a flange on the upper portion formed with a circular series of apertures;

a mounting frame positioned on the flange with the upper surface exposed from the ground, the mounting frame including a circular series of arcuate slots formed along the outer periphery, an annular recess formed on the inner periphery and a plurality of threaded holes formed in the annular recess;

said mounting frame having an upper surface which is inclined so as to protrude from the ground, said upper surface having a projection guide groove cut therein, said mounting frame being narrower toward its outer periphery;

a plurality of fasteners extending through the arcuate slots in said mounting frame and apertures in said flange, and operable to fixedly clamp the mounting frame to the flange so that the position of the mounting frame is adjustable in a horizontal plane;

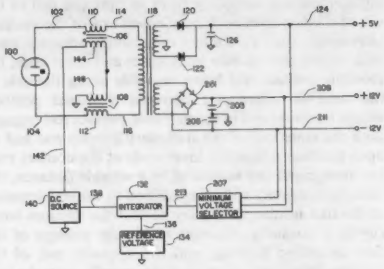
a casing including a peripheral portion positioned on the annular recess so that the casing is supported by the mounting frame, the casing including a window for directing a beam radially, said window being formed in alignment with one end of said guide groove in the upper portion of the casing, a plurality of apertures formed in the peripheral end and corresponding to said threaded holes in the annular recess, and a sealed chamber; and a lamp and light control member which are disposed in the sealed chamber whereby light emitted from the lamp is projected from the window through the light control member.

4,343,034

MAGNETIC AMPLIFIER PREREGULATOR FOR LINEAR POWER SUPPLIES

Richard B. Wells, Boise; Chester G. Haibel, Jr., Meridian, and Richard L. Hilton, Boise, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 18, 1980, Ser. No. 179,417
Int. Cl.³ H02P *13/24;* G05F *1/22*
U.S. Cl. 363—82 **1 Claim**



1. A magnetic amplifier preregulator comprising:

transductor means having an inductance variable over a predetermined range of inductances in response to a first electrical signal for providing an a.c. output signal;

d.c. source means coupled to the transductor means for providing the first electrical signal and for varying the current of the first electrical signal in response to a second electrical signal;

integrator means coupled to the d.c. source means for providing the second electrical signal in response to an input signal and to a reference signal; and

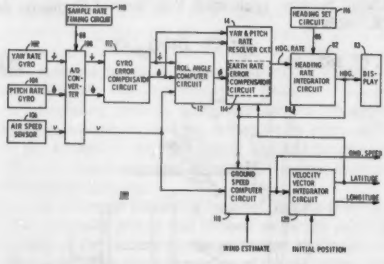
minimum voltage selector means for comparing a plurality of voltages, for selecting the lowest valued of the plurality of voltages, and for providing the input signal to the integrator means.

4,343,035

HEADING REFERENCE SYSTEM

Walter E. Tanner, 29 Barney Hill Rd., Wayland, Mass. 01778

Filed Apr. 14, 1980, Ser. No. 140,295
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—453 **11 Claims**



1. An aircraft heading reference system comprisng:

means for sensing the yaw rate $\dot{\psi}$ of the aircraft and producing electrical signals representative thereof;

means for sensing the pitch rate $\dot{\theta}$ of the aircraft and producing electrical signals representative thereof;

means for sensing the air speed v of the aircraft and producing electrical signals representative thereof;

means, responsive to said electrical signals representative of said yaw rate, pitch rate, and air speed, for determining an

electrical signal representative of the roll angle ϕ according to the expression:

$$\dot{\psi}+\dot{\theta}\tan\phi=(\tan\phi/\cos\phi)\,(g/v);$$

and

means, responsive to said pitch rate $\dot{\theta}$, yaw rate $\dot{\psi}$, and roll angle ϕ electrical signals, for resolving said yaw and pitch rates about said roll angle for providing an electrical signal representative of the heading rate of the aircraft.

4,343,036
IMAGE FORMING APPARATUS

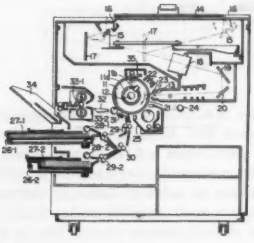
Katsuichi Shimizu, Hoya; Shunichi Masuda, Tokyo, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 964,985, Nov. 30, 1978, abandoned. This application Jun. 20, 1980, Ser. No. 161,498

Claims priority, application Japan, Dec. 2, 1977, 52-144857; Dec. 2, 1977, 52-144858

Int. Cl.³ G06F *15/20, 11/32*

U.S. Cl. 364—518 **27 Claims**



1. An image forming apparatus comprising:

image forming means having a plurality of process executing means for executing an image forming process;

a plurality of input means for entering data needed for execution of said image forming process by said image forming means;

first control means having a first storage means for storing a first program to read out the data entered from one of said input means and to control said process executing means; and

second control means having a second storage means for storing a second program to read out the data entered from another of said input means, said second control means controlling said first control means to operate said process executing means in accordance with the data entered from said input means.

4,343,037
VISUAL DISPLAY SYSTEMS OF THE COMPUTER GENERATED IMAGE TYPE

Martin J. P. Bolton, Crawley, England, assignor to Redifon Simulation Limited, Sussex, England

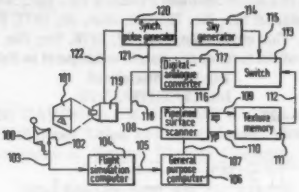
Filed Jun. 13, 1980, Ser. No. 159,442

Claims priority, application United Kingdom, Jun. 15, 1979, 7920882; Jun. 9, 1980, 8018838

Int. Cl.³ G09B *9/08*

U.S. Cl. 364—521 **6 Claims**

1. In a visual display system of the computer generated image type, for a ground-based flight simulator, providing a rectangular raster scanned, perspective-transformed, pilot's visual display of a simulated textured surface, the improvement comprising the provision of a surface detail generator comprising a perspective transformation computer and a surface texture detail store, the perspective transformation computer being a pipelined calculator for computing in real time the perspective transformation from the display system display plane to the simulated surface plane continuously during simulated flight, and correspondingly scanning the surface texture



detail store to provide texture for each element of the said rectangular raster scanned pilot's visual display.

4,343,038
MAGNETIC BUBBLE DOMAIN STRUCTURE

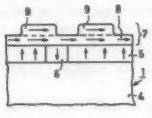
Ulrich E. Enz, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1980, Ser. No. 183,502

Claims priority, application Netherlands, Sep. 28, 1979, 7907217

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—36 **5 Claims**



1. A magnetic bubble domain structure comprising:

a nonmagnetic substrate;

a substantially planar bubble domain layer on the substrate, said layer having a major surface opposite the substrate, said layer comprising a soft magnetic material in which magnetic domains can be propagated, said material having a positive magnetic anisotropy constant; and

a control layer on the major surface of the bubble domain layer, said control layer comprising a soft magnetic material which defines at least one bubble domain propagation path;

CHARACTERIZED IN THAT the control layer has a negative anisotropy constant, said control layer further comprising:

a first, continuous sublayer; and

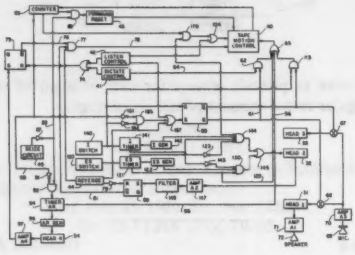
a second, discontinuous sublayer which defines at least one bubble domain propagation path for guiding the movement of bubble domains under the influence of a magnetic field having a rotating field component parallel to the plane of the bubble domain layer, said first and second sublayers being substantially parallel to the plane of the bubble domain layer.

4,343,039

DICTATION-TRANSCRIPTION METHOD AND SYSTEM

Jack E. Smith, Jr., and Paul C. Mason, both of Thomaston, Ga., assignors to Lanier Business Products Co., Inc., Atlanta, Ga.

Continuation of Ser. No. 781,359, Mar. 25, 1977, Pat. No. 4,249,041. This application Dec. 27, 1978, Ser. No. 973,699
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.[3] G11B *27/10*
U.S. Cl. 369—28 25 Claims



1. A method of recording dictation on a recording medium including a plurality of recording tracks, comprising the steps of

moving said medium relative to a recording device in a forward direction;

recording voice-generated dictation signals on a first track of said plurality of tracks while said medium is moving in a forward direction;

selectively moving said medium in a reverse direction relative to said recording device;

subsequent to said reverse moving of said medium again moving said medium in a forward direction while providing an audible output signal corresponding to the voice-generated signals recorded in said first track;

selectively recording an instruction indexing signal independent of voice-generated signals in a second track of said plurality of tracks following any sequence of forward and reverse moving of said medium relative to said recording device;

following recording of said instruction indexing signal, recording a voice generated instruction signal in one of said plurality of tracks other than said first track;

upon termination of said instruction signal recording step, moving said medium in the forward direction until the farthest point along said medium at which dictation signals have previously been recorded in said first track is reached at said recording device; and

preventing recording of dictation signals in said first track from the initiation of recording of said instruction indexing signal until said medium has been moved to said farthest point along said medium at which dictation signals have previously been recorded in said first track.

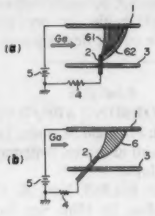
4,343,040

TRANSVERSE EXCITATION TYPE LASER OSCILLATOR

Kouzaburo Shibayama; Toshimitsu Akiba; Haruhiko Nagai, and Masao Hishii, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 47,820, Jun. 12, 1979. This application Jun. 26, 1981, Ser. No. 277,605
Int. Cl.[3] H01S *3/08*
U.S. Cl. 372—87 2 Claims

1. In a transverse excitation type laser oscillator having a plane anode, a plurality of cathodes arranged in a row so that the length of each cathode is essentially perpendicular to said plane anode, a laser medium fed in transverse direction between the row of said cathodes and said plane anode to generate a glow discharge path between said plane anode and said cathodes by applying a DC voltage between said plane anode and each of said cathodes, an improvement comprising: a glow discharge stabilizing insulator on each of said cathodes for restricting movement of said glow discharge region caused by



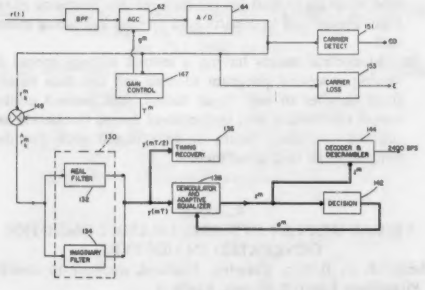
said transfer of said laser medium wherein said insulator substantially covers each of said cathodes except for the portion of a cathode nearest said plane anode to thereby satabilize said glow discharge region at high medium pressures and high discharge currents.

4,343,041

MODEM CIRCUITRY

George D. Forney, Jr., Cambridge, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Apr. 3, 1980, Ser. No. 136,754
Int. Cl.[3] H04B *3/14*
U.S. Cl. 375—14 3 Claims



1. Modem receiver apparatus having circuitry for automatically adaptively equalizing received signals, including equalizer updating circuitry for updating coefficients stored in the equalizer, wherein said apparatus comprises

means for detecting the duration of periodicity in said received signals,

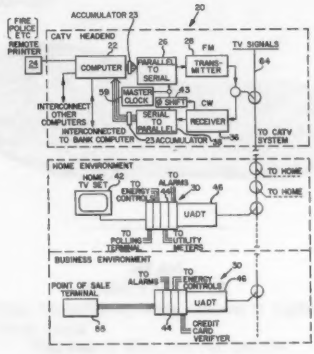
means for comparing said duration of periodicity to a threshold, and

means for freezing said updating circuitry when said duration exceeds said threshold, and for otherwise releasing said updating circuitry to permit updating of said coefficients.

4,343,042
BI-DIRECTIONAL DATA TRANSMISSION AND CONTROL SYSTEM

Clifford B. Schrock, and Linley F. Gumm, both of Beaverton, Oreg., assignors to Cablebus Systems Corporation, Beaverton, Oreg.

Filed Jul. 9, 1979, Ser. No. 56,283
Int. Cl.[3] H04N 7/10; H04B 3/50
U.S. Cl. 455—5 5 Claims



1. In a bi-directional data transmission system including a cable television (CATV) headend, said headend including a centrally-located computer for monitoring and controlling multiple different remote service devices at each of a multiplicity of subscriber terminals coupled to said CATV headend, respective circuit means different from one another for interfacing each of said remote service devices with a respective one of said terminals, and transceiver means for sending and receiving serial message packets bi-directionally between said CATV headend and said terminals, the improvement comprising:

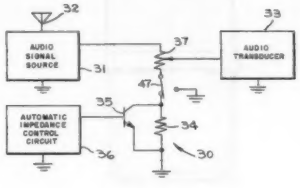
(a) demarcation means at each of said terminals operatively interposed between said CATV headend and said respective circuit means, said demarcation means including means for converting messages between parallel and serial formats respectively and including first data bus connecting means for initiating a data bus having multiple lines for conducting messages in said parallel format; and

(b) respective modules, each containing a respective one of said circuit means and each having a pair of data bus connecting means for detachably connecting a first one of said modules to said first data bus connecting means and detachably connecting said modules consecutively to each other, and for continuing said data bus consecutively through each module from one to another thereof such that messages can be transmitted on said data bus consecutively through each module without alteration thereof by said modules.

4,343,043
RADIO HAVING A CRESCENDO AUDIO ALARM

Lloyd K. McLennan, Utica, and Albert Lacell, Vernon, both of N.Y., assignors to General Electric Company, New York, N.Y.

Filed Dec. 17, 1980, Ser. No. 217,210
Int. Cl.[3] H04B 1/16
U.S. Cl. 455—231 10 Claims



1. A radio comprising:

(a) circuit means for receiving a transmitted radio having a crescendo alarm signal and providing an audio frequency electrical signal;

(b) an audio transducer;

(c) a variable impedance means having minimum and maximum impedance levels;

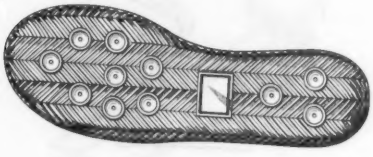
(d) selector means in series with the variable impedance means and said circuit means and being responsive to the electrical signal, said selector means being further connected to the input of the audio transducer for providing said electrical signal for driving the audio transducer to produce sound at a first level established by a selected setting of said selector means and the minimum impedance level of said variable impedance means and a second level established by the selected setting of the selector means and the maximum impedance level of said variable impedance means; and

(e) timer means for automatically varying the impedance of said variable impedance means continuously and monotonically during a predetermined time interval, thereby increasing the level of the sound above the level corresponding to said selected setting.

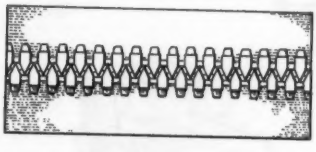
DESIGNS

AUGUST 3, 1982

265,605
UNIT SOLE
Vijay Batra, Brockton, Mass., assignor to Morse Shoe, Inc., Canton, Mass.
Filed Mar. 9, 1979, Ser. No. 19,320
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



265,606
SLIDE FASTENER
Kazumi Kasai, Namerikawa, Japan, assignor to Yoshida Kogyo, K.K., Tokyo, Japan
Filed Jan. 8, 1980, Ser. No. 110,394
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—415

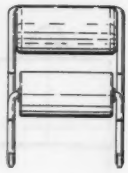


265,607
GARMENT BAG
Marvin Cooper, 122 Trenor Dr., New Rochelle, N.Y. 10804
Filed Jun. 2, 1980, Ser. No. 155,646
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

265,608
PAINT BRUSH AND TOOL KEEPER
Rodney G. Sparrow, 9 Coolidge Dr., Acton, Mass. 01720
Filed Sep. 29, 1980, Ser. No. 191,486
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—73

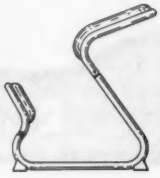
265,609
CHILD SAFETY SEAT FOR VEHICLES
Juichiro Takada, 3-12-1 Shinmachi Setagayaku, Tokyo, Japan
Filed Mar. 24, 1980, Ser. No. 133,469
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7

265,610
CHAIR
Svein A. Gusrud, Tokerudberget 18, Oslo 9, and Hans C. Mengshoel, Gabelsgate 41, Oslo 2, both of Norway
Filed May 7, 1980, Ser. No. 147,589
Claims priority, application Norway, Dec. 14, 1979, 60665
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38



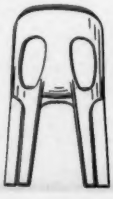
265,611
HANGING CHAIR
Kenneth C. Knudson, Downers Grove, Ill., assignor to Sybaris Inns Ltd., Downers Grove, Ill.
Filed Mar. 18, 1980, Ser. No. 131,451
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47

265,612
CHAIR
Svein A. Gusrud, Tokerudberget 18, Oslo 9, and Hans C. Mengshoel, Gabelsgate 41, Oslo 2, both of Norway
Filed May 7, 1980, Ser. No. 147,637
Claims priority, application Norway, Dec. 14, 1979, 60665
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38

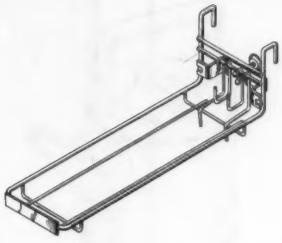


265,613
CHAIR
Otto Zapf, Königstein, Fed. Rep. of Germany, assignor to Drabert Sohne Minden (Westf.), Minden, Fed. Rep. of Germany
Filed Jul. 2, 1979, Ser. No. 53,867
The portion of the term of this patent subsequent to Sep. 15, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69

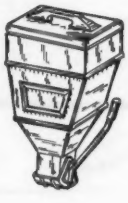
265,614
CHAIR
Henry Massonnet, Nurieux (Ain), France (01760)
Filed Jan. 14, 1980, Ser. No. 112,241
Claims priority, application France, Aug. 1, 1979, 431
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76



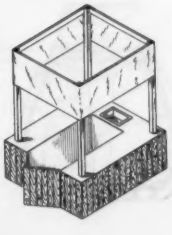
265,615
DISPLAY TRAY
Jean Virte, Domont, and Laurent Costa, Ville D'Avray, both of France, assignors to Union Carbide Corporation, Danbury, Conn.
Filed Mar. 27, 1980, Ser. No. 134,708
Term of patent 14 years
Int. Cl. D08—*08;* D06—*06*
U.S. Cl. D6—114



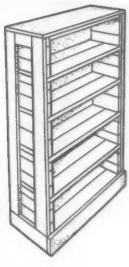
265,616
DISPENSING CONTAINER OR SIMILAR ARTICLE
Thomas C. Fischer, Gretna, and John P. Nepper, Omaha, both of Nebr., assignors to A & F Dispenser, Inc., Gretna, Nebr.
Filed Jun. 23, 1980, Ser. No. 161,779
Term of patent 14 years
Int. Cl. D6—*04;* D23—*02*
U.S. Cl. D6—127



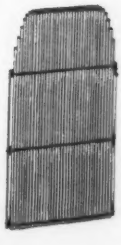
265,617
SERVICE BOOTH FOR STORES AND THE LIKE
Henry N. Saurage, III; Donna M. Saurage, and Janette D. Waddelow, all of Baton Rouge, La., assignors to Community Coffee Company, Inc., Baton Rouge, La.
Filed Apr. 28, 1980, Ser. No. 144,639
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144



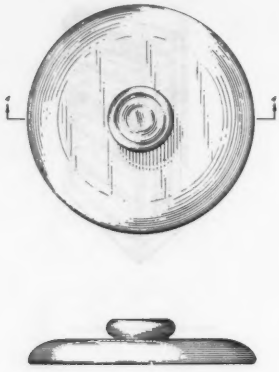
265,618
BOOKCASE
Stephen H. Robertson, 5719 Sendero Dr., and Randall L. Ward, Leesville Rd., both of, Raleigh, N.C. 27612
Filed Jul. 26, 1979, Ser. No. 60,899
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



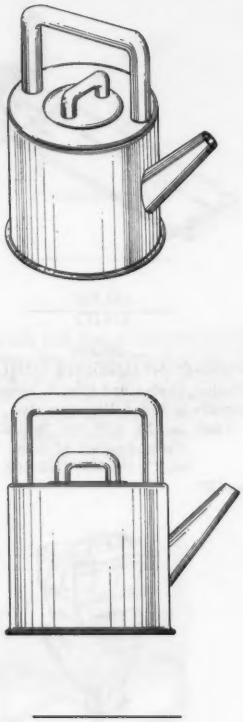
265,619
CUSHION FOR CAR SEAT
Kazuyoshi Kano, 8612 Garvey Ave., Rosemead, Calif. 91770
Filed Aug. 4, 1980, Ser. No. 175,352
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—200



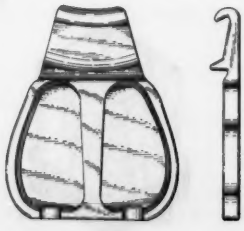
265,620
DISH COVER OR SIMILAR ARTICLE
George B. Jensen, deceased, late of Syracuse, N.Y. (by Stanley F. Campion, executor), assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Jan. 28, 1980, Ser. No. 116,316
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—40



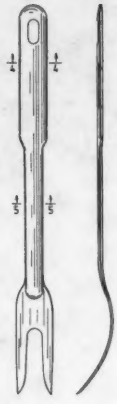
265,621
TEA KETTLE OR SIMILAR ARTICLE
Joy Christov Urich, 1133 Park Ave., New York, N.Y. 10028
Filed Sep. 23, 1980, Ser. No. 190,008
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—60



265,622
COMBINED POT LID HOLDER AND SPOON HOLDER
Dawn R. Bartels, 11151 NW. 35th Pl., Coral Springs, Fla. 33065
Filed Aug. 11, 1980, Ser. No. 177,203
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—73



265,623
KITCHEN FORK OR SIMILAR UTENSIL
Ben Seibel, New York, N.Y., assignor to Oxford Hall Silversmiths, Ltd., New York, N.Y.
Filed Oct. 4, 1979, Ser. No. 81,979
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—106



265,624
HANDLE FOR A STAPLING MACHINE
Paul Goldfracht, P.O. Box 292, Waterbury, Conn. 06720
Filed Jun. 3, 1980, Ser. No. 156,176
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—107

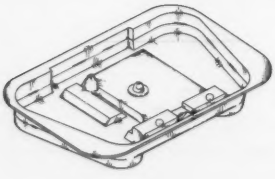
265,625
VALANCE BRACKET FOR VENETIAN BLIND
Basil Buck, Middlesex, N.J., assignor to Hunter Douglas, Inc., Totowa, N.J.
Filed Jun. 27, 1980, Ser. No. 163,502
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354

265,626
DISPENSING CONTAINER
Edward C. Kozlowski, Trumbull, Conn., assignor to Sterling Drug Inc., New York, N.Y.
Filed Jun. 6, 1980, Ser. No. 157,113
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—373

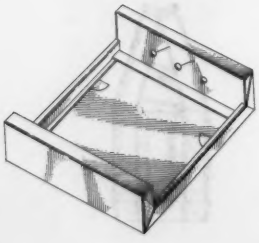
265,627
BOTTLE OR SIMILAR ARTICLE
Michael Segal, Mount Royal, Canada, assignor to Qualcor Inc., Montreal, Canada
Filed Jul. 28, 1980, Ser. No. 173,227
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389

265,628
PILL DISPENSING CONTAINER
Dordie Redaelli, Fagersta, and Kerstin Berggrund, Boxholm, both of Sweden, assignors to Astra-Syntex Scandinavia Aktiebolag, Södertälje, Sweden
Filed Dec. 27, 1979, Ser. No. 107,716
Claims priority, application Sweden, Jun. 29, 1979, 791566
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418

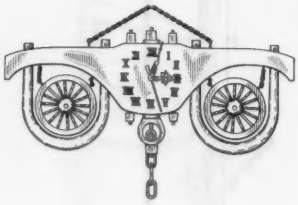
265,629
TRAY FOR HOLDING TYPEWRITER FILM RIBBON CASSETTE
Darrell D. Fish, Timonium, Md., assignor to T.H.E.M., Inc., Pennsauken, N.J.
Filed Jun. 9, 1980, Ser. No. 157,269
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—425



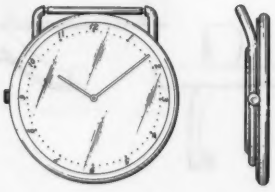
265,630
CARDBOARD BOX FOR PACKING AND DISPLAY
Birgitta Wahlberg, and Lars Wahlberg, both of Mora Tuna, S-755 90 Uppsala, Sweden
Filed Jul. 22, 1980, Ser. No. 171,036
Claims priority, application Sweden, Feb. 1, 1980, 80-0221
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—456



265,631
CLOCK
Billy R. Newton, 3604 Belmont Dr., Hood River, Oreg. 97031
Filed Aug. 4, 1980, Ser. No. 175,248
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6

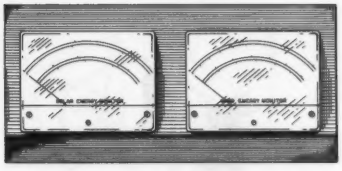


265,632
WATCH
Jean-Louis F. Dumas-Hermes, Paris, France, assignor to La Montre Hermes S.A., Bienne, Switzerland
Filed Apr. 2, 1979, Ser. No. 26,434
Claims priority, application France, Oct. 4, 1978, 31813
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



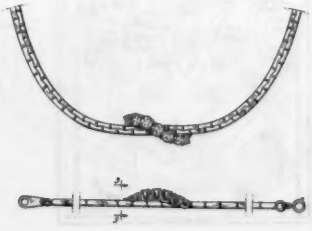
265,633
CASING VOLUME MEASURING TAPE
Edward A. Johnson, Box 4084 Civic Center, San Rafael, Calif. 94903
Filed Aug. 30, 1979, Ser. No. 71,108
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71

265,634
SOLAR AND WIND ENERGY MONITOR
Gaylord B. Buck, Denver, Colo., assignor to Aero Systems Research, Inc., Englewood, Colo.
Filed May 15, 1980, Ser. No. 150,194
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—75



265,635
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Apr. 28, 1980, Ser. No. 144,207
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6

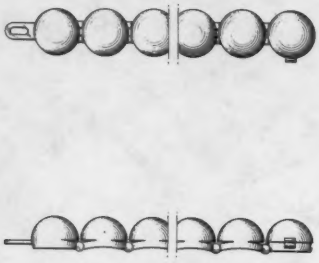
265,636
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Apr. 28, 1980, Ser. No. 144,208
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6



265,637
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed May 8, 1980, Ser. No. 148,191
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6

265,638
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Apr. 28, 1980, Ser. No. 144,209
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—10

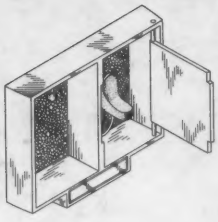
265,639
BRACELET OR SIMILAR ARTICLE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed Aug. 7, 1980, Ser. No. 176,131
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—17



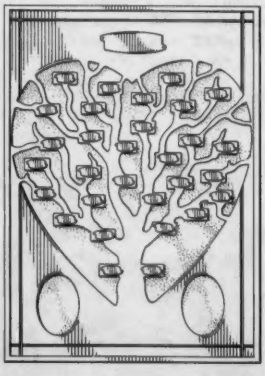
265,640
JEWELRY CHAIN ARRANGER
Betty S. Hill, 1712 Loberg La., Jonesboro, Ark. 72401
Filed Jul. 21, 1980, Ser. No. 170,945
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—86

265,641
JEWEL HOLDER FOR A PINCH EARRING
Alexander J. Bongiorno, 760 Peartree La., Grosse Pointe Woods, Mich. 48236
Filed Sep. 22, 1980, Ser. No. 189,491
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—92

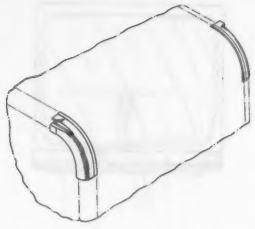
265,642
NOVELTY PLAQUE OR THE LIKE
Benjamin A. Aubert, 350 Los Encinos Ct., San Jose, Calif. 95134
Filed Jul. 28, 1980, Ser. No. 172,701
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—133



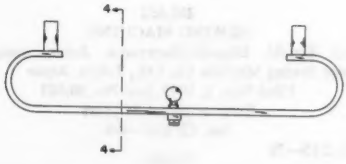
265,643
PLAQUE WITH AN ANCESTRAL TREE
Ernest P. Smith, Rte. 2, Box 9569, Show Low, Ariz. 85901
Filed Aug. 15, 1980, Ser. No. 178,022
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—135



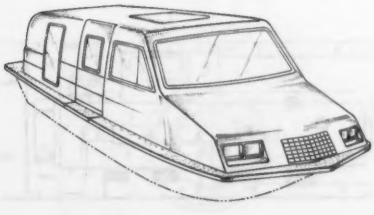
265,644
VEHICLE VAN CORNER CAP MEMBER
John R. Spence, La Habra, Calif., assignor to Pike Trailer Co., South Gate, Calif.
Filed Apr. 21, 1980, Ser. No. 141,875
Term of patent 14 years
Int. Cl. 12—*16*
U.S. Cl. D12—93



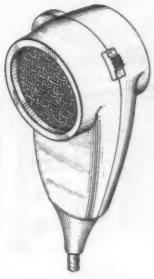
265,645
COMBINED BALL HITCH AND VEHICLE CARRIER FOR GOLF CLUB CARTS HAVING VERTICAL MOUNTING COUPLING
Auborn R. Hampton, 1307 Garth Ave., SW., Decatur, Ala. 35601
Filed Feb. 25, 1980, Ser. No. 124,232
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



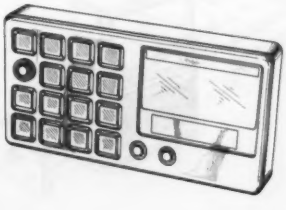
265,646
HOUSEBOAT DECK
Frank J. Fortier, 600 Railroad Ave., Pittsburg, Calif. 94565
Filed Aug. 22, 1979, Ser. No. 68,606
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—301



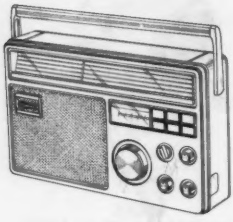
265,647
HAND HELD MICROPHONE
James P. Liautaud, Cary, Ill., assignor to American Antenna Corporation, Elgin, Ill.
Filed Jan. 16, 1980, Ser. No. 112,552
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



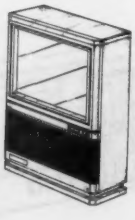
265,648
DIALING PAD FOR A CAR TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 17, 1980, Ser. No. 160,831
Claims priority, application Japan, Dec. 28, 1979, 54-055048
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



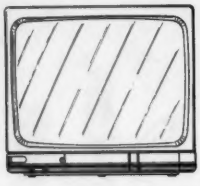
265,649
RADIO RECEIVER
Masanori Hamada, Yao, and Yoshiyuki Saigo, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 30, 1980, Ser. No. 192,398
Claims priority, application Japan, Apr. 2, 1980, 55-13172
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70

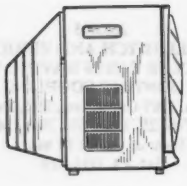


265,650
PROJECTION TELEVISION RECEIVER
Takayo Sugiwaka, Kyoto; Yoshiaki Kawata, Takatsuki, and Tadashi Sumino, Kuze, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 15, 1980, Ser. No. 150,621
Claims priority, application Japan, Nov. 20, 1979, 54-48775
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—79

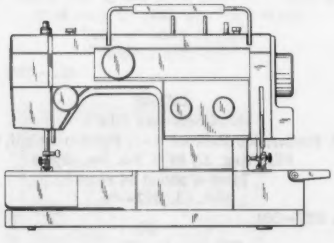


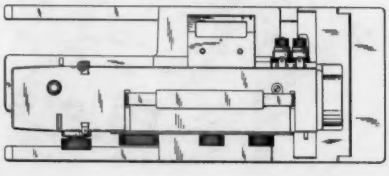
265,651
COLOR TELEVISION RECEIVER
Ennio Brion, Milan, Italy, assignor to Brionvega S.p.A., Milan, Italy
Filed Nov. 19, 1979, Ser. No. 95,257
Claims priority, application Italy, May 18, 1979, 21618 B/79
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—80



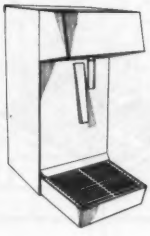


265,652
SEWING MACHINE
Yoshiaki Eguchi, Higashi-Murayama, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed Nov. 1, 1979, Ser. No. 90,483
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—70

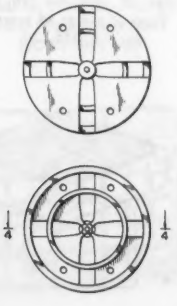




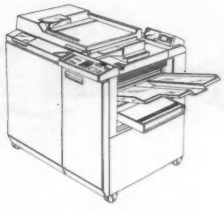
265,653
BEVERAGE DISPENSER
William A. Arzberger, Medfield, and Edward J. LaLumiere, Woburn, both of Mass., assignors to Data Packaging Corporation, Cambridge, Mass.
Filed Mar. 10, 1980, Ser. No. 129,172
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—112



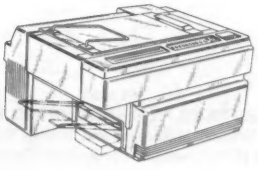
265,654
GUIDE PLATE FOR A MULTIPLE SPINDLE ATTACHMENT FOR DRILLING AND TAPPING MACHINES
Eiji Miyakawa, Tokyo, Japan, assignor to Miyakawa Industry Co., Ltd., Seki, Japan
Filed Apr. 24, 1980, Ser. No. 143,220
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—132



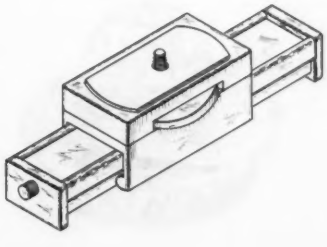
265,655
ELECTROSTATIC COPIER
Tetuya Goto, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Aug. 26, 1980, Ser. No. 181,629
Claims priority, application Japan, Mar. 7, 1980, 8885
Term of patent 7 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



265,656
ELECTROPHOTOGRAPHIC COPIER
Hiroshi Matsushima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 8, 1980, Ser. No. 184,736
Claims priority, application Japan, Mar. 19, 1980, 10743
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31

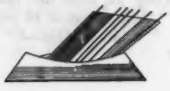


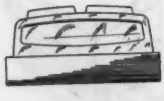
265,657
CAMERA ATTACHMENT FOR TAKING THREE DIMENSIONAL PICTURES
James R. Lovell, 402 C The Commons Way, Fishkill, N.Y. 12524
Filed Sep. 11, 1980, Ser. No. 186,250
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—47



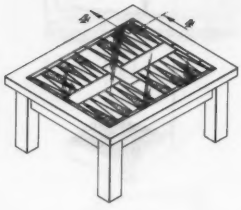
265,658
GUITAR
Thomas P. Kenny, 6661 School Circle Dr., Riverside, Calif. 92506
Filed Jun. 24, 1980, Ser. No. 162,618
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—19

265,659
COMBINED CARD FILE AND CURVED TOP CARDS
Hildaur L. Neilsen, Metuchen, and Martin Glaubinger, Teaneck, both of N.J., assignors to Rolodex Corporation, Secaucus, N.J.
Continuation of Ser. No. 561,778, Mar. 25, 1975, Pat. No. Des. 247,042. This application Apr. 1, 1977, Ser. No. 783,860
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

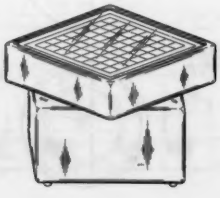




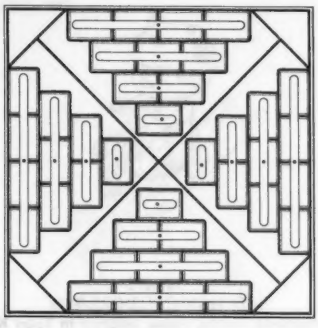
265,660
GAME TABLE
Andrew D. Jackson, 4314 Commonwealth Ave., Apt. A-8, Charlotte, N.C. 28205
Filed May 12, 1980, Ser. No. 148,981
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—14



265,661
ILLUMINATED SWIVEL TOP TABLE USABLE AS AN ORNAMENTAL DISPLAY AND/OR GAME SURFACE
Robert P. Schoenfeld, 2 Kennedy Dr., Plainview, N.Y. 11803, and Monte N. Alpert, 136 Academy Hill Rd., Brighton, Mass. 02135
Filed Jun. 13, 1980, Ser. No. 159,107
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—24

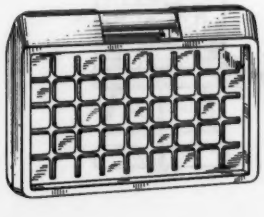


265,662
GAME BOARD
Thomas T. Bouve, Bethesda, Md., assignor to Tech Games, Incorporated, Bethesda, Md.
Filed Jun. 19, 1980, Ser. No. 161,129
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—34



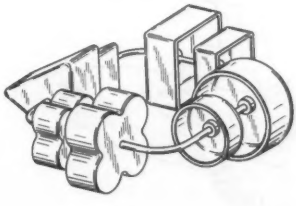
265,663
DICE GAME BOX
Donald E. Godberson, 9316 - 112th Ave., Ft. St. John, B.C. V1J 2V9, Canada
Filed Dec. 19, 1979, Ser. No. 105,425
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—41

265,664
ACTIVITY TOY
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Jul. 31, 1980, Ser. No. 174,031
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D21—59



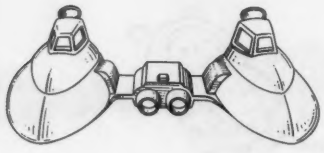
265,665
RATTLE TOY
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Masako Mizugami, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Apr. 15, 1980, Ser. No. 140,635
Claims priority, application Japan, Nov. 19, 1979, 54-48467
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—64

265,666
EDUCATIONAL TOY RATTLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Susumu Matsumoto, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Sep. 17, 1980, Ser. No. 188,157
Claims priority, application Japan, Apr. 22, 1980, 55-15880
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65

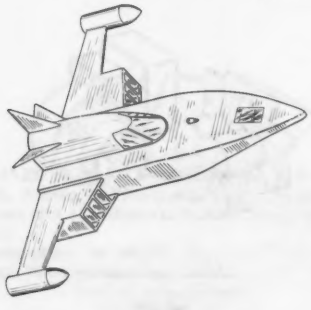


265,667
TOY SPACE VEHICLE
Hangwind F. Lippisch; Elizabeth F. Lippisch, and Debra J. Wilcox, all of Wooster, Ohio, assignors to Studio 5, Wooster, Ohio
Filed Aug. 28, 1980, Ser. No. 182,455
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—86

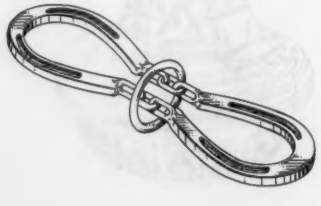
265,668
TOY SPACE VEHICLE
George W. Lucas, Jr., San Anselmo, and Joseph E. Johnston, Fairfax, both of Calif., assignors to Lucasfilm, San Rafael, Calif.
Filed Apr. 25, 1980, Ser. No. 143,906
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



265,669
TOY SPACE CRAFT
Mustafa Fehric, 20 Falstaff Ave., Apt. #406, Weston, Ontario, Canada (M6L 2C8)
Filed Sep. 8, 1980, Ser. No. 185,146
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



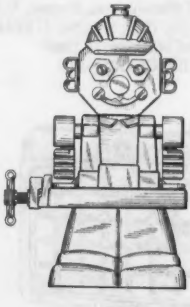
265,670
HORSESHOE PUZZLE
Joe A. Holland, 13619 N. 29th Pl., Phoenix, Ariz. 85032
Filed Nov. 5, 1979, Ser. No. 91,175
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—104



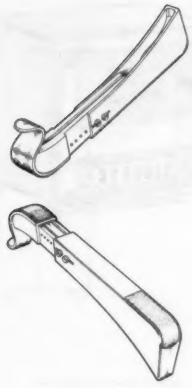
265,671
MECHANICAL DOLL TOY
Yuichi Takahashi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jun. 16, 1980, Ser. No. 159,684
Claims priority, application Japan, Jun. 5, 1979, 54-23139
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150

265,672
MECHANICAL DOLL TOY
Yuichi Takahashi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jun. 16, 1980, Ser. No. 159,690
Claims priority, application Japan, Jun. 5, 1979, 54-23138
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150

265,673
TOY ROBOT
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Aug. 11, 1980, Ser. No. 176,842
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—150

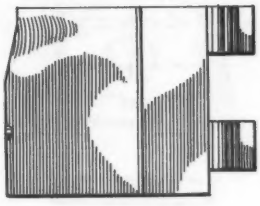


265,674
GUARD FOR SKATE BLADE
Jan L. Grönborg, Fullerstavägen 42, S-141 44 Huddinge, and Lars E. Persson, Mönstringsvägen 20, S-184 00 Akersberga, both of Sweden
Filed Aug. 25, 1980, Ser. No. 180,697
Claims priority, application Sweden, Feb. 25, 1980, 80-0398
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—225

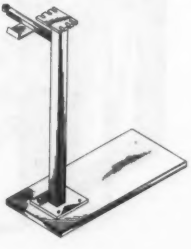


265,675
HAND HELD SKIING STABILIZER OR SIMILAR ARTICLE
Jacques Ducourant, 3600 S. Redwood Rd., Salt Lake City, Utah 84119
Filed May 23, 1980, Ser. No. 152,589
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—230

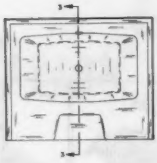
265,676
CORNER FOR LOBSTER TRAP
Emile A. P. Plante, 74 Badgers Island, Kittery, Me. 03904
Filed Oct. 30, 1980, Ser. No. 202,329
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



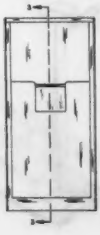
265,677
PORTABLE RELOADER PEDESTAL
Danny R. O'Connell, 975 S. Broadway, Othello, Wash. 99344
Filed Aug. 28, 1980, Ser. No. 182,462
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—99



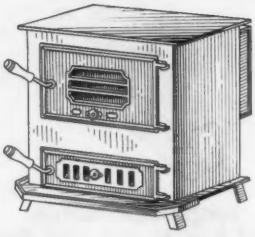
265,678
BATHTUB
James H. Ballard, 513 Bexar Ave., Hamilton, Ala. 35570
Filed Sep. 8, 1980, Ser. No. 185,363
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



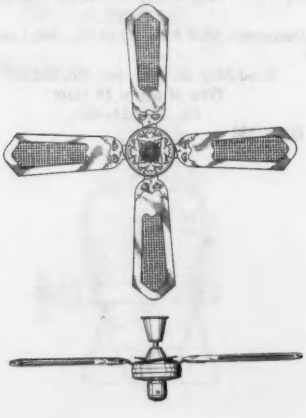
265,679
SHOWER STALL
James H. Ballard, 513 Bexar Ave., Hamilton, Ala. 35570
Filed Sep. 8, 1980, Ser. No. 185,364
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



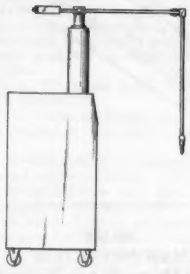
265,680
COAL STOVE
Arthur M. Hicks, Jr., Diamond Lake, Warner, N.H. 03278, and John H. Millar, Jr., 222 Martling Ave., Tarrytown, N.Y. 10591
Filed Sep. 17, 1980, Ser. No. 188,007
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



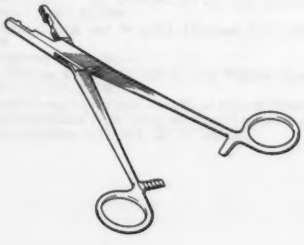
265,681
CEILING FAN
Frederick S. C. Kan, 7 Ko Fai Rd., Kofi Industrial Bldg., Block C, First Flr., Yautong, Kowloon, Hong Kong
Filed Feb. 13, 1981, Ser. No. 234,384
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—158



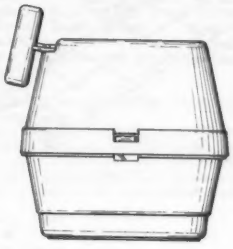
265,682
SURGICAL LASER
Norihiro Suenaga, Tokyo, Japan, assignor to Nippon Infrared Industries Co., Ltd., Tokyo, Japan
Filed Nov. 28, 1979, Ser. No. 98,040
Claims priority, application Japan, May 31, 1979, 54-22316
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—8



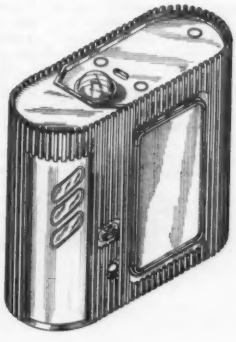
265,683
WINDOWED HOOK HOLDER
Denis S. Drummond, Madison, Wis., and Michael R. Mayock, Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.
Filed Feb. 4, 1980, Ser. No. 118,320
Term of patent 14 years
Int. Cl. D24—*02*; D8—*03*
U.S. Cl. D24—27



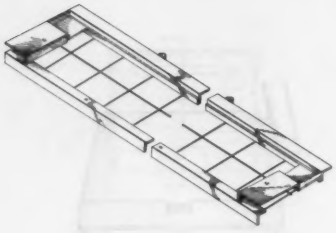
265,684
HYPODERMIC NEEDLE DESTROYER
William D. Christoffel, Two Rivers, Wis., and Christopher J. C. Edwards, Woodland Hills, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Nov. 19, 1979, Ser. No. 97,259
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—99



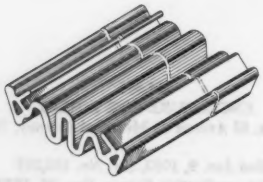
265,685
ENCLOSURE FOR TOILET
Jean C. Decaux, 53 Avenue du Marechal Lyautey, 75016 Paris, France
Filed Jun. 9, 1980, Ser. No. 158,055
Claims priority, application France, Dec. 10, 1979, 43,025
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—16



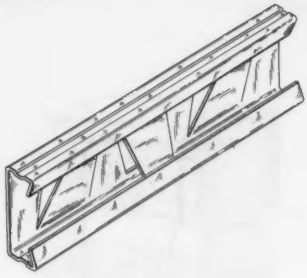
265,686
CAST-IN-PLACE THRESHOLD STRUCTURE FOR OVERHEAD DOOR OPENINGS IN BUILDING WALLS, AND THE LIKE
Ulyss E. Smithson, P.O. Box 1026, Elizabeth City, N.C. 27909
Filed Sep. 22, 1980, Ser. No. 189,795
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—73



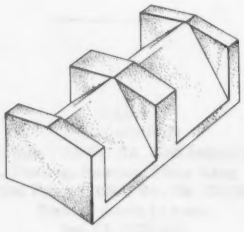
265,687
EXPANSION JOINT SEALING STRIP FOR ROADWAY JOINTS AND THE LIKE
William E. Bowman, Englewood, Colo., assignor to Bowman Construction Supply, Inc., Denver, Colo.
Filed Jun. 30, 1980, Ser. No. 164,012
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



265,688
CONSTRUCTION BEAM
Abraham C. Bissu, Av. de las fuentes No. 295, Techamachalco, Estado de Mexico, Mexico
Filed Jul. 9, 1980, Ser. No. 166,954
Claims priority, application Mexico, Jan. 10, 1980, 2994
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



265,689
MASONRY BLOCK
Richard Miniere, 685 Minnesota Ave., Winter Park, Fla. 32789
Filed Jun. 16, 1980, Ser. No. 160,022
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—97



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. Gerrard & Company: *See*—
Simich, Emil, 4,342,138, Cl. 24-27.000.

AB Skanska Cementgjunteriet: *See*—
Larkfeldt, Owe C. G., 4,342,713, Cl. 264-71.000.

Abbott Laboratories: *See*—
Chittenden, Richard M., 4,342,313, Cl. 128-214.400.

Abex Corporation: *See*—
Larson, Hugo R.; Avery, Howard S.; and Chapin, Henry J., 4,342,593, Cl. 75-128.00A.

Abraham, Carl J.; and Newman, Malcolm, to Levine, Alan H. Protective headgear. 4,342,122, Cl. 2-424.000.

Abrahams, Louis; and Izod, Thomas P. J., to Millipore Corporation. Wear-resistant sintered composition having an empirical formula $CF_{1.3}$ comprising graphite fibers, fluonnated graphite, and PTFE. 4,342,679, Cl. 524-401.000.

Accattino, Andrea, to Ing. C. Olivetti & C., S.p.A. Optical transducer for detecting the angular position of a rotating member with respect to a fixed structure. 4,342,909, Cl. 250-231.0SE.

Adamski, Robert: *See*—
Morselli, Paolo L.; De Santis, Louis, Jr.; and Adamski, Robert, 4,342,783, Cl. 424-330.000.

Adamson, Hugh P., to University Patents, Inc. Apparatus for detecting air disturbances created by low level wind shear. 4,342,912, Cl. 250-339.000.

Adcock, James L., to Sheller-Globe Corporation. Plastic core composite having improved impact resistance. 4,342,810, Cl. 428-215.000.

Adlerwerke vorm Heinrich Kleyer A.G.: *See*—
Kuhn, Lothar, 4,342,521, Cl. 400-637.000.

Adolfsson, Rune; and Berns, Lennart, to Intercylinder AB. Apparatus for aerating beverages. 4,342,710, Cl. 261-121.00R.

Advanced Chemical Technologies, Inc.: *See*—
Brown, Roy N.; and Stout, Mike F., 4,342,796, Cl. 427-136.000.

AGFA-GEVAERT N.V.: *See*—
Van Poucke, Raphael K.; Monbaliu, Marcel J.; and Vandewalle, Jan J., 4,342,825, Cl. 430-505.000.

Ahagon, Asahiro; Misawa, Makoto; and Hirakawa, Hiroshi, to Yokohama Rubber Co., Ltd., The. Process for preparing rubber compositions for tire treads. 4,342,670, Cl. 523-353.000.

Ahlers, Egon, to Seitz-Werke GmbH. Filling element for counterpressure container-filling machines. 4,342,344, Cl. 141-39.000.

Ahrens, Ulrich E., to Blutspendedienstst der Landesverbande des Deutshen Roten Kreuzes Niedersachsen Oldenburg and Remen, GmbH. Process and apparatus for producing sterilized and bacteria-free water. 4,342,651, Cl. 210-636.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Kanou, Noboru; and Mori, Keiji, 4,342,481, Cl. 296-217.000.

Akahane, Shoji: *See*—
Muramatsu, Hiroaki; Tomioka, Kentaro; Hirota, Kazuo; and Akahane, Shoji, 4,342,677, [illegible] 23-116.000.

Akeel, Hadi K. A.; Bartlett, [illegible]nald S.; Beaulieu, Theodore J.; and Choly, Mitchell, to General Motors Corporation. Door-opener apparatus. 4,342,536, Cl. 414-744.00A.

Akiba, Masakuni; Nagatomo, Hiroto; and Suzuki, Jun, to Hitachi, Ltd. Method of inspecting the surface of an object and apparatus therefor. 4,342,515, Cl. 356-237.000.

Akiba, Toshimitsu: *See*—
Shibayama, Kouzaburo; Akiba, Toshimitsu; Nagai, Haruhiko; and Hishii, Masao, 4,343,040, Cl. 372-87.000.

Akimoto, Shinichi; and Kimura, Akio, to Idemitsu Kosan Company Limited. Process for the production of polyethylene. 4,342,855, Cl. 526-124.000.

Akiyama, Hiroshi; and Oinuma, Koji, to Rohm and Haas Company. Method of manufacture of ion exchange resins. 4,342,839, Cl. 521-25.000.

Akzona Incorporated: *See*—
Gerlach, Klaus; Mathes, Nikolaus; Pitowski, Hans-Jurgen; and Wechs, Friedbert, 4,342,801, Cl. 428-91.000.
Patton, George A.; and Muehling, Richard C., 4,342,498, Cl. 339-256.00R.
Rasen, Alfred; Vollbrecht, Rolf; Schenesse, Klemens; and Behnke, Joachim, 4,342,807, Cl. 428-180.000.
Torenbeek, Reinder; van Drumpt, Jan D.; and Drost, Gerrit F., 4,342,844, Cl. 525-387.000.
Zengel, Hans-Georg; and Bergfeld, Manfred, 4,342,707, Cl. 260-543.00A.

Albany International Corp.: *See*—
Lopatin, George; Coplan, Myron J.; and Walton, James P., Jr., 4,342,811, Cl. 428-220.000.

Albe.ino, Louis M.; and Regelman, Dale F., to Upjohn Company, The. Polyamide polyurethane prepared by reaction of polyisocyanate with a 1,1-diamino ethylene. 4,342,841, Cl. 521-163.000.

Albers-Schonberg, George; Monaghan, Richard L.; Alberts, Alfred W.; and Hoffman, Carl H., to Merck & Co., Inc. Hypocholesteremic fermentation products. 4,342,767, Cl. 424-250.000.

Alberts, Alfred W.: *See*—
Albers-Schonberg, George; Monaghan, Richard L.; Alberts, Alfred W.; and Hoffman, Carl H., 4,342,767, Cl. 424-250.000.

Albright, Jay D.: *See*—
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,689, Cl. 260-326.340.
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,690, Cl. 260-326.340.
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Alekhin, Stanislav A.; Bakhir, Vitold M.; Born, Raisa I.; Bakhir, Tatyana M.; and Khusandzhanov, Aman I. Method for the determination of depth of a fluid-saturated stratum and fluid type. 4,342,222, Cl. 73-153.000.

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Hagelberg, Allen C.; and Allardt, Clark E., 4,342,252, Cl. 89-1.812.

Allen, John H.: *See*—
Berke, Herbert; and Allen, John H., 4,342,984, Cl. 340-347.0DA.

Allen, Karl D.; Perlick, Mark A.; and Van Gorder, Jack H., to General Motors Corporation. Oil level control. 4,342,543, Cl. 417-211.500.

Allen, Robert P.; and Ruggles, Albert C., to Eastman Kodak Company. Process for the preparation of hydrocarbon resins. 4,342,850, Cl. 525-339.000.

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Grenell, David, 4,342,493, Cl. 339-44.00M.

Allied Corporation: *See*—
Stephenson, Robert L., 4,342,471, Cl. 280-804.000.

Allingham, Robert P.: *See*—
Weeks, Paul D.; and Allingham, Robert P., 4,342,697, Cl. 549-396.000.

Allis-Chalmers Corporation: *See*—
Baker, Douglas H.; and Dry, Dennis P., 4,342,530, Cl. 411-374.000.
Shupert, Paul T., 4,342,187, Cl. 56-257.000.
Stikeleather, Larry F.; and Kaminski, Tony L., 4,342,186, Cl. 56-257.000.
Willis, Billy B.; and Fetters, L. Michael, 4,342,319, Cl. 130-27.00R.

Alloway Manufacturing, Inc.: *See*—
Gates, Donald C., 4,342,367, Cl. 172-776.000.

Alperstein, Martin: *See*—
Canup, Robert E.; and Alperstein, Martin, 4,342,305, Cl. 123-617.000.

Alter, Larry D.: *See*—
Councilman, Clyde L.; and Alter, Larry D., 4,342,971, Cl. 333-152.000.

Amada Company, Limited: *See*—
Tsutsui, Kikuo, 4,342,237, Cl. 74-625.000.

AMAX Inc.: *See*—
Queneau, Paul B.; Beckstead, Leo W.; and Hogsett, Robert F., 4,342,728, Cl. 423-61.000.

Amemiya, Akira: *See*—
Sugio, Akitoshi; Amemiya, Akira; Kimura, Masaharu; Otuki, Yoshiharu; and Kawaguchi, Kiyokazu, 4,342,680, Cl. 524-100.000.

American Air Filter Company, Inc.: *See*—
Cole, Saxon, 4,342,153, Cl. 33-169.00B.

American Can Company: *See*—
Baker, Harry T., 4,342,404, Cl. 221-10.000.
Faber, Marcel D.; Ernst, Richard H.; and Lefebvre, Philip H., 4,342,831, Cl. 435-165.000.

American Cyanamid Company: *See*—
Halverson, Frederick, 4,342,653, Cl. 210-734.000.
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,689, Cl. 260-326.340.
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,690, Cl. 260-326.340.
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Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, 4,342,752, Cl. 424-180.000.
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Schiller, Arthur M.; and Balcerski, James S., 4,342,652, Cl. 210-698.000.

American Home Products Corporation: *See*—
Sarantakis, Dimitrios, 4,342,671, Cl. 525-54.110.

American Optical Corporation: *See*—
Hovey, Richard J.; Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., 4,342,668, Cl. 252-586.000.

American Science and Engineering, Inc.: *See*—
Bjorkholm, Paul J., 4,342,914, Cl. 378-99.000.

Ames, Adolf: *See—*
Wagner, Alfred; and Ames, Adolf, 4,342,211, Cl. 72-253.100.

AMP Incorporated: *See—*
Bennett, Benny M.; Kocher, Timothy L.; and Little, David M., 4,342,495, Cl. 339-163.000.
Dola, Frank P., 4,342,888, Cl. 200-83.00R.

Andersen, Hans S.; Christensen, Helge K.; and Christiansen, Preben, to Danfoss, A/S. Control device for a hydraulic motor. 4,342,256, Cl. 91-420.000.

Anderson, Hugh G.; and Hatchard, Philip J., to United States of America, Navy. Self-aligning rolling contact thrust bearing/vibration reducer element. 4,342,488, Cl. 308-15.000.

Anderson, Mardis V.; Griffee, Leslie V.; Grona, William H.; and Leverington, Richard D., to Rockwell International Corporation. Digitally tuned electrically small antenna. 4,343,001, Cl. 343-745.000.

Anderson, Richard N. Material fastening structure and method. 4,342,524, Cl. 403-331.000.

Andrews, Glenn C., to Pfizer Inc. 5-Keto-L-ascorbic acid-5,5-dimethyl ketal, derivatives thereof and its use as an antioxidant and intermediate. 4,342,695, Cl. 549-315.000.

Anspach, Roy L.: *See—*
Campbell, James R.; and Anspach, Roy L., 4,342,899, Cl. 219-78.120.

Aoki, Akihiro: *See—*
Shimada, Keizo; Aoki, Akihiro; Mera, Hiroshi; and Nakamura, Tsutomu, 4,342,715, Cl. 264-184.000.

Aoki, Hideki, to Dental Chemical Co., Ltd. Dentifrice compositions. 4,342,741, Cl. 424-57.000.

Aoki, Tsutomu: *See—*
Nagata, Wataru; and Aoki, Tsutomu, 4,342,685, Cl. 260-239.00A.

Apollo Technologies, Inc.: *See—*
Kober, Alfred E.; and Kestner, Mark O., 4,342,797, Cl. 427-220.000.

Applied Offshore Technology, Inc.: *See—*
Mousselli, Al H., 4,342,326, Cl. 405-159.000.

Applied Power Inc.: *See—*
Legrand, Pierre, 4,342,154, Cl. 33-180.0AT.

Arai, Masaaki; Ohba, Masami; Ricketts, Guy A. G.; and Steer, Jean A., to Lever Brothers Company. Hair treatment products. 4,342,744, Cl. 424-70.000.

Aratani, Matsuhiko: *See—*
Hashimoto, Masashi; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; and Hagiwara, Daijiro, 4,342,760, Cl. 424-246.000.

Archer, William R., to General Electric Company. Proportional base drive circuit. 4,342,956, Cl. 323-289.000.

Armbruster, Joachim: *See—*
van Wijhe, Albert; Munster, Ernst; Wagenbrenner, Gerhard; Rocker, Fritz; Armbruster, Joachim; Metzger, Klaus; and Ratzel, Rudiger, 4,342,934, Cl. 310-239.000.

Armstrong, William D.; and Winnick, Charles N., to Halcon SD Group, Inc., The. Process for preparing a silver catalyst. 4,342,667, Cl. 252-476.000.

Armstrong World Industries, Inc.: *See—*
Garrett, Thomas B.; Herweh, John E.; and Magnusson, Alan B., 4,342,696, Cl. 549-331.000.

Arnold, Franklin D.: *See—*
Benton, Charles M.; Arnold, Franklin D.; Kellogg, George W.; and Kirk, Roger D., 4,342,178, Cl. 52-125.500.

Arrow Converting Equipment Inc.: *See—*
Mastriani, Elvin A., 4,342,433, Cl. 242-72.00B.

Arthur D. Little, Inc.: *See—*
Loeffler, Herbert H., 4,342,623, Cl. 202-83.000.

Asahi Glass Company, Ltd.: *See—*
Kozawa, Shigeyuki; Doi, Takao; and Kunii, Nobuaki, 4,342,840, Cl. 521-137.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Iwashita, Hidemaro; and Hayashi, Kenichi, 4,342,737, Cl. 423-522.000.
Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; and Tsuyama, Shigeo, 4,342,708, Cl. 260-665.00R.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Haraguchi, Keisuke, 4,342,508, Cl. 354-152.000.

ASEA Aktiebolag: *See—*
Brogardh, Torgny, 4,342,919, Cl. 250-577.000.
Solver, Carl E., 4,342,891, Cl. 200-148.00A.

Ashworth, Sara. Bicycle and motor bike warning signal device. 4,342,280, Cl. 116-202.000.

Assier, Pierre-Jean: *See—*
Liotet, Serge; and Assier, Pierre-Jean, 4,342,747, Cl. 424-95.000.

Associated Octel Company, Ltd., The: *See—*
Stirling, William, 4,342,219, Cl. 73-35.000.

Atkinson, Anthony; Bruton, Christopher J.; Comer, Michael J.; and Sharp, Richard J., to Public Health Laboratory Service, Center for Applied Microbiology & Research. Production of enzymes. 4,342,827, Cl. 435-26.000.

Atwood Vacuum Machine Company: *See—*
Marx, Thomas O., 4,342,447, Cl. 267-64.230.

Avery, Howard S.: *See—*
Larson, Hugo R.; Avery, Howard S.; and Chapin, Henry J., 4,342,593, Cl. 75-128.00A.

Axelgaard, Jens, to Professional Staff Association of the Rancho Los Amigos Hospital, Inc., The. Method of electrical muscle stimulation for treatment of scoliosis and other spinal deformities. 4,342,317, Cl. 128-421.000.

Ayers, Robert D., to Stackpole Components Company. Keyswitch. 4,342,892, Cl. 200-159.00A.

Azcon Corporation: *See—*
Weaver, Simeon D., 4,342,127, Cl. 10-57.000.

Azzi, Jean-Michel: *See—*
Rebaudieres, Paul; and Azzi, Jean-Michel, 4,342,787, Cl. 426-103.000.

Babcock Textilmaschinen KG (GmbH & Co.), Firma: *See—*
Rommel, Heinz, 4,342,206, Cl. 68-205.00R.

Bader, Leonhard; Giessner, Frank; Rombach, Friedrich B.; and Winter, Hermann, to NCR Corporation. Nozzle plate for ink jet print head. 4,343,013, Cl. 346-140.00R.

Baditke, Deane L.; and Lehman, Robert V., to Keystone Consolidated Industries, Inc. Box and lid construction. 4,342,403, Cl. 220-345.000.

Baer, Ralph H.; Cope, Leonard D.; and Mortimer, Thomas J., to Sanders Associates, Inc. Method of and apparatus for instant replay and other capabilities for microprocessor-controlled video games. 4,342,454, Cl. 273-85.00G.

Bahnson Company, The: *See—*
Clark, Amos S., Jr.; McMordie, James R.; and Walker, Michael D., 4,342,130, Cl. 15-312.00A.

Baird, William C., Jr.: *See—*
Mauldin, Charles H.; and Baird, William C., Jr., 4,342,644, Cl. 208-139.000.

Baker, Charles D., to Brewing Patents Limited. Method of purifying iso-α-acids. 4,342,791, Cl. 426-600.000.

Baker, Douglas H.; and Dry, Dennis P., to Allis-Chalmers Corporation. Water dam for a fastener. 4,342,530, Cl. 411-374.000.

Baker, Harry T., to American Can Company. Automatic can end transfer device. 4,342,404, Cl. 221-10.000.

Baker, Jack T. Universal flue stack heat exchanger. 4,342,359, Cl. 165-47.000.

Bakhir, Tatyana M.: *See—*
Alekhin, Stanislav A.; Bakhir, Vitold M.; Born, Raisa I.; Bakhir, Tatyana M.; and Khusandzhanov, Aman I., 4,342,222, Cl. 73-153.000.

Bakhir, Vitold M.: *See—*
Alekhin, Stanislav A.; Bakhir, Vitold M.; Born, Raisa I.; Bakhir, Tatyana M.; and Khusandzhanov, Aman I., 4,342,222, Cl. 73-153.000.

Balcerski, James S.: *See—*
Schiller, Arthur M.; and Balcerski, James S., 4,342,652, Cl. 210-698.000.

Baldwin, Johnny E. Waveform instability detector. 4,342,965, Cl. 328-147.000.

Baliga, Bantval J.; and Shealy, James R., to General Electric Company. Vertical channel field effect transistor. 4,343,015, Cl. 357-55.000.

Ball Corporation: *See—*
Frame, Wayne W., 4,343,021, Cl. 358-213.000.

Ban, Itsuki; and Kanno, Hidenori. Piston unit. 4,342,884, Cl. 200-34.000.

Bandar, Lesley F. Device for tying double bow knot. 4,342,557, Cl. 434-260.000.

Banks, Robert L.: *See—*
Hogan, John P.; and Banks, Robert L., 4,342,854, Cl. 526-75.000.

Bartek, Joseph P.; Grasselli, Robert K.; and Cepulis, Rimvydas L., to Standard Oil Company, The. Olefin oxidation process. 4,342,698, Cl. 549-505.000.

Bartholomaus, Reiner; and Wolfges, Hans, to Die G. L. Rexroth GmbH. Hydraulic control- and/or measuring device, particularly solenoid-controlled flow regulating valve. 4,342,331, Cl. 137-553.000.

Bartlett, Donald S.; and Beaulieu, Theodore J., to General Motors Corporation. Door-opener apparatus. 4,342,535, Cl. 414-744.00A.

Bartlett, Donald S.: *See—*
Akeel, Hadi K. A.; Bartlett, Donald S.; Beaulieu, Theodore J.; and Choly, Mitchell, 4,342,536, Cl. 414-744.00A.

Barton, Jeffrey N.: *See—*
Suh, John T.; Chung, Rack H.; Wang, Nai-Yi; and Barton, Jeffrey N., 4,342,692, Cl. 260-326.460.

BASF Wyandotte Corporation: *See—*
Tincher, Cline A.; and Maxwell, Jerrold F., 4,342,658, Cl. 252-32.500.

Bath, Christopher P.: *See—*
Pretorius, Willem J., 4,342,459, Cl. 273-413.000.

Batty, W. Lawson, Jr.: *See—*
Fishbaugh, Warren D.; Batty, W. Lawson, Jr.; and Freedman, Frank J., 4,342,716, Cl. 264-225.000.

Bauer, William V.; and Sze, Morgan C., to Lummus Company, The. Steam pyrolysis of hydrocarbons. 4,342,642, Cl. 208-130.000.

Bausch, Alfred: *See—*
Grossmann, Horst; and Bausch, Alfred, 4,342,931, Cl. 310-50.000.

Bayer Aktiengesellschaft: *See—*
Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, 4,342,867, Cl. 542-417.000.
Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, 4,342,847, Cl. 525-66.000.
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,342,704, Cl. 260-464.000.
Idel, Karsten; Cohnen, Wolfgang; and Freitag, Dieter, 4,342,681, Cl. 524-108.000.
Illger, Hans-Walter; Dahm, Manfred; and Gonzalez-Dorner, Alberto C., 4,342,798, Cl. 427-244.000.
Reel, Henning; Kruckenberg, Winfried; and Schundehutte, Karl H., 4,342,683, Cl. 260-156.000.
Steinbeck, Werner; and Gehrke, Gunter, 4,342,701, Cl. 260-383.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Liebegott, Klaus, 4,343,031, Cl. 362-80.000.

Bayusik, John G.: *See*—
Fuzesi, Stephen; and Bayusik, John G., 4,342,864, Cl. 536-18.000.
BBC Brown, Boveri & Company, Limited: *See*—
Jaecklin, Andre, 4,343,014, Cl. 357-38.000.
Beard, Harold J.: *See*—
Fletcher, Laird C.; and Beard, Harold J., 4,342,645, Cl. 208-184.000.
Beatovic, Branislav P.; Kuzmanovic, Stevan L.; Kudinov, Vladimir M.; and Petuskov, Vladimir. Explosion method of finishing welded joints. 4,342,609, Cl. 148-127.000.
Beatrice Foods Co.: *See*—
Lee, Gerry A., 4,342,406, Cl. 222-442.000.
Beaulieu, Theodore J.: *See*—
Akeel, Hadi K. A.; Bartlett, Donald S.; Beaulieu, Theodore J.; and Choly, Mitchell, 4,342,536, Cl. 414-744.00A.
Bartlett, Donald S.; and Beaulieu, Theodore J., 4,342,535, Cl. 414-744.00A.
Bechtel International Corporation: *See*—
Klingman, Gilbert E., 4,342,876, Cl. 560-77.000.
Becker, Joahann; Koop, Hermann; and Schueddekopf, Hans, to Polygram GmbH. Anode case for a galvanic bath. 4,342,635, Cl. 204-263.000.
Beckman Instruments, Inc.: *See*—
Conway, George E., 4,342,419, Cl. 233-1.00A.
Beckstead, Leo W.: *See*—
Queneau, Paul B.; Beckstead, Leo W.; and Hogsett, Robert F., 4,342,728, Cl. 423-61.000.
Beecham Group Limited: *See*—
Harbridge, John B., 4,342,749, Cl. 424-114.000.
Behnke, Joachim: *See*—
Rasen, Alfred; Vollbrecht, Rolf; Schenesse, Klemens; and Behnke, Joachim, 4,342,807, Cl. 428-180.000.
Bell Telephone Laboratories, Incorporated: *See*—
Howard, Richard E.; and Jackel, Lawrence D., 4,342,924, Cl. 307-245.000.
Ohm, Edward A., 4,343,004, Cl. 343-781.00P.
Vella-Coleiro, George P.; and Wolfe, Raymond, 4,342,962, Cl. 324-232.000.
Willens, Ronald H., 4,342,608, Cl. 148-101.000.
Belleli, Riccardo. Counterflow heat exchanger having two fixed tube plates. 4,342,362, Cl. 165-158.000.
Bendix Corporation, The: *See*—
Normann, Richard W.; and Niles, Paul D., 4,342,494, Cl. 339-105.000.
Bendrik, Valery G.: *See*—
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P., 4,342,898, Cl. 219-76.140.
Bennett, Benny M.; Kocher, Timothy L.; and Little, David M., to AMP Incorporated. Double entry crimp terminal. 4,342,495, Cl. 339-163.000.
Benton, Charles M.; Arnold, Franklin D.; Kellogg, George W.; and Kirk, Roger D., to National Steel Corp.; and Southwire Co. Carbon anode furnace cover construction. 4,342,178, Cl. 52-125.500.
Benton, Robert L., to General Motors Corporation. Ball nut with internal crossover for ball recirculation. 4,342,235, Cl. 74-424.80R.
Berenyi nee Poldermann, Edit; Gorog, Peter; Grasser, Katalin; Kosoczky, Ibolya; Koracs nee Palotay, Agnes; and Petocz, Lujza, to Egyt Gyogyszervegyeszeti Gyar. Novel dihydro-as-triazino[5,6-c]quinoline derivatives and a process for the preparation thereof. 4,342,766, Cl. 424-249.000.
Bergamaschi, Maria: *See*—
Cozzi, Paolo; Mongelli, Nicola; Pillan, Antonio; Bergamaschi, Maria; and Lovisolo, Pier P., 4,342,775, Cl. 424-273.00R.
Berger-Lohr, Bernd: *See*—
Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, 4,342,867, Cl. 542-417.000.
Bergfeld, Manfred: *See*—
Zengel, Hans-Georg; and Bergfeld, Manfred, 4,342,707, Cl. 260-543.00A.
Berke, Herbert; and Allen, John H., to United States of America, Navy. High speed digital to analog converter circuit. 4,342,984, Cl. 340-347.0DA.
Bernath, Tibor. Apparatus for extracting a hot gas sample from a chamber and for feeding the sample to an analyzer. 4,342,234, Cl. 73-863.120.
Berns, Lennart: *See*—
Adolfsson, Rune; and Berns, Lennart, 4,342,710, Cl. 261-121.00R.
Bernstein, Seymour: *See*—
Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, 4,342,752, Cl. 424-180.000.
Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, 4,342,753, Cl. 424-180.000.
Berry, David A.; Preston, Joseph R.; and Hillenbrand, Louis J., to RCA Corporation. High density information disc lubricants. 4,342,660, Cl. 252-49.600.
Best Lock Corporation: *See*—
Foshee, William R., 4,342,478, Cl. 292-352.000.
Bestard, Thomas L.; and Roesler, Richard R., to Eaton Corporation. Grapple head harness. 4,342,534, Cl. 414-734.000.
Beta Corporation of St. Louis: *See*—
Volk, Joseph A., Jr., 4,342,361, Cl. 165-113.000.
Bethesda Research Laboratory: *See*—
Chirikjian, Jack G., 4,342,833, Cl. 435-178.000.
Bethune, Billy R.; and Dearing, Charles C., to Container Corporation of America. Container with integral hanger bar. 4,342,389, Cl. 206-288.000.
Betz Laboratories, Inc.: *See*—
Steelhammer, Joe C.; and Hutta, Paul J., 4,342,733, Cl. 423-242.000.
Bey, Philippe; and Jung, Michel, to Merrell-Toraude et Cie. Method of depleting endogenous monoamines. 4,342,780, Cl. 424-319.000.
Beyl, Jean J. A., to Ste Look. Ski brake. 4,342,468, Cl. 280-605.000.
Bhatti, Mohinder S.; and Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass fibers. 4,342,577, Cl. 65-1.000.
Bhatti, Mohinder S.; and Higginbotham, James M., Sr., to Owens-Corning Fiberglas Corporation. Method of forming apparatus for forming glass fibers. 4,342,578, Cl. 65-1.000.
Bhushan, Manjul: *See*—
Catalano, Anthony W.; and Bhushan, Manjul, 4,342,879, Cl. 136-265.000.
Bi-Modal Corporation: *See*—
Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,342,264, Cl. 105-215.00C.
Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,342,265, Cl. 105-215.00C.
Biber, Klaus: *See*—
Muller, Ortwin; Biber, Klaus; Schmauder, Roland; and Spitznas, Manfred, 4,342,951, Cl. 318-625.000.
Bilenko, Herman W.: *See*—
Han, Ching C.; Bilenko, Herman W.; and Hwang, Yeongming, 4,343,005, Cl. 343-781.00P.
Billerud Uddeholm Aktiebolag: *See*—
Gladh, Arne I. L., 4,342,619, Cl. 162-262.000.
Birmingham Bolt Company: *See*—
White, Claude C., 4,342,527, Cl. 405-259.000.
Birnberg, Gary H.: *See*—
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,689, Cl. 260-326.340.
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,690, Cl. 260-326.340.
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., 4,342,691, Cl. 260-326.360.
Biss, Rudy; and Nadeau, Raymond, to Les Services TMG Inc. Direct flotation of pyrochlore. 4,342,648, Cl. 209-166.000.
Bjorkholm, Paul J., to American Science and Engineering, Inc. Flying spot scanner having arbitrarily shaped field size. 4,342,914, Cl. 378-99.000.
Black & Decker Inc.: *See*—
Grossmann, Horst; and Bausch, Alfred, 4,342,931, Cl. 310-50.000.
Horne, David, 4,342,929, Cl. 310-43.000.
Black, Kenneth P.: *See*—
Johnson, Bruce K.; and Black, Kenneth P., 4,342,506, Cl. 354-27.000.
Blair, Charles M., Jr., to Magna Corporation. Method for breaking petroleum emulsions and the like using thin film spreading agents comprising a polyether polyol. 4,342,657, Cl. 252-8.55D.
Blanchard, Robert R.; and Bourne, Tommy R., to Dow Chemical Company, The. Processing modifier for high-density polyethylene. 4,342,848, Cl. 525-231.000.
Blome, James C., to Swiss Aluminium Ltd. Molten metal filter. 4,342,664, Cl. 252-313.00R.
Blout, Bennett O., to Evans Products Company. Hopper discharge unit with sliding gate. 4,342,267, Cl. 105-282.00P.
Bloyd, Jon A. Light indicating system having light emitting diodes and power reduction circuit. 4,342,947, Cl. 315-199.000.
Blum, Jacques, to Uranium Pechiney Ugine Kuhlmann. Control rod for a nuclear reactor. 4,342,722, Cl. 376-327.000.
Blutspendedienst der Landesverbande des Deutshen Roten Kreuzes Niedersachsen Oldenburg and Remen, GmbH: *See*—
Ahrens, Ulrich E., 4,342,651, Cl. 210-636.000.
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances, Inc. Use of mixture of aliphatic C_{10} branched olefins in augmenting or enhancing the aroma of articles subjected to action of aqueous hypochlorites. 4,342,663, Cl. 252-186.360.
Bodine, Albert G. Apparatus and method for coupling sonic energy to the bore hole wall of an oil well to facilitate oil production. 4,342,364, Cl. 166-249.000.
Bogan, Richard T.: *See*—
Brewer, Richard J.; and Bogan, Richard T., 4,342,865, Cl. 536-76.000.
Boger, Manfred: *See*—
Drabek, Jozef; and Boger, Manfred, 4,342,778, Cl. 424-285.000.
Bohanszky, Victor A., to Davy Inc. Sealing apparatus. 4,342,555, Cl. 432-115.000.
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; and Nehmiz, Peter, to International Business Machines Corporation. Mask for structuring surface areas, and method of making it. 4,342,817, Cl. 430-5.000.
Bollinger, Frederic G., to Monsanto Company. Substituted 2-imino-1,3-dithio and 1,3-oxathio heterocyclic compounds as herbicidal antidotes. 4,342,586, Cl. 71-90.000.
Bolton, Martin J. P., to Redifon Simulation Limited. Visual display systems of the computer generated image type. 4,343,037, Cl. 364-521.000.
Borg-Warner Chemicals, Inc.: *See*—
Halpern, Yuval; and Hall, Donald D., Jr., 4,342,682, Cl. 523-179.000.

Borg-Warner Corporation: *See*—
Braybrook, Kenneth A., 4,342,561, Cl. 474-242.000.
Ledvina, Timothy J.; and Mead, Robert H., 4,342,560, Cl. 474-157.000.

Borg-Warner Limited: *See*—
Gardner, Derek, 4,342,238, Cl. 74-689.000.

Boring, David E.; and Quibell, Larry T., to Sonoco Products Company. Positive seal spout. 4,342,408, Cl. 222-566.000.

Born, Raisa I.: *See*—
Alekhin, Stanislav A.; Bakhir, Vitold M.; Born, Raisa I.; Bakhir, Tatyana M.; and Khusandzhanov, Aman I., 4,342,222, Cl. 73-153.000.

Borvendeg, Janos: *See*—
Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,342,754, Cl. 424-241.000.

Botrel, Yvon; Fremond, Roland; and Mourlevat, Jean, to Societe Nationale Elf Aquitaine (Production). Connector for an end of an underwater pipe. 4,342,519, Cl. 405-169.000.

Bott, John A. Vehicle luggage rack. 4,342,411, Cl. 224-319.000.

Bourdeau, Romeo G., to United Technologies Corporation. Cubic boron nitride and metal carbide tool bit. 4,342,595, Cl. 75-238.000.

Bourne, Tommy R.: *See*—
Blanchard, Robert R.; and Bourne, Tommy R., 4,342,848, Cl. 525-231.000.

Bowers, Joseph S., Jr.: *See*—
Cheng, Dah-Chieh O.; Bowers, Joseph S., Jr.; and Maner, Ronald J., 4,342,877, Cl. 560-130.000.

Bowie, Robert A., to Sperry Corporation. Synchro stabilizer circuit. 4,342,952, Cl. 318-654.000.

Box, Thomas, to Spectrum International, Inc. Stackable poultry coop. 4,342,393, Cl. 206-504.000.

Bozzini, Vittorio. Teleindicator for information boards. 4,342,992, Cl. 340-764.000.

BP Chemicals Limited: *See*—
Cane, Charles; and Yeomans, Bertram, 4,342,627, Cl. 203-19.000.

Bradley, John S.: *See*—
Pruett, Roy L.; and Bradley, John S., 4,342,838, Cl. 518-713.000.

Bradshaw, John: *See*—
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Bradshaw, John; and Hayes, Norman F., 4,342,756, Cl. 424-244.000.

Brandmaier, C. Edward: *See*—
Dennis, Edmund G.; and Brandmaier, C. Edward, 4,342,182, Cl. 53-156.000.

Braybrook, Kenneth A., to Borg-Warner Corporation. Power transmission belt. 4,342,561, Cl. 474-242.000.

Breig, Kurt: *See*—
Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, 4,342,867, Cl. 542-417.000.

Breitenfellner, Franz: *See*—
Buxbaum, Lothar; and Breitenfellner, Franz, 4,342,678, Cl. 524-539.000.

Brewer, Richard J.; and Bogan, Richard T., to Eastman Kodak Company. High temperature bleaching method for cellulose esters. 4,342,865, Cl. 536-76.000.

Brewing Patents Limited: *See*—
Baker, Charles D., 4,342,791, Cl. 426-600.000.

Bridgestone Tire Co., Ltd.: *See*—
Kuroda, Masahiro, 4,342,351, Cl. 152-209.00R.
Tamura, Akira; and Suzuki, Yasuo, 4,342,353, Cl. 152-362.00R.

Bristol-Myers Company: *See*—
Mackles, Leonard, 4,342,522, Cl. 401-214.000.

British Petroleum Company Limited, The: *See*—
Brown, David E.; Hall, Stephen M.; and Mahmood, Mahmood N., 4,342,792, Cl. 427-34.000.
Ehlers, Jorn; and Haukelt, Helmut, 4,342,661, Cl. 252-70.000.
Webb, Michael G., 4,342,655, Cl. 210-749.000.

Brix, Joachim; and Weiss, Friedrich, to Jastram-Werke GmbH KG. Fin rudder for ships. 4,342.275, Cl. 114-162.000.

Brodrene Gram A/S: *See*—
Gram, Hans, 4,342,205, Cl. 62-341.000.

Brogardh, Torgny, to ASEA Aktiebolag. Fiber optical measuring device. 4,342,919, Cl. 250-577.000.

Brollos, Gunther. Device for pressing pants. 4,342,409, Cl. 223-73.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Nozu, Takashi; Yamada, Minoru; and Watanabe, Yasuhiko, 4,342,528, Cl. 408-6.000.

Brown, David E.; Hall, Stephen M.; and Mahmood, Mahmood N., to British Petroleum Company Limited, The. Electrodes and method of preparation thereof for use in electrochemical cells. 4,342,792, Cl. 427-34.000.

Brown, James B. Liquid dispensing unit and method of manufacture thereof. 4,342,395, Cl. 206-530.000.

Brown, Roy N.; and Stout, Mike F., to Advanced Chemical Technologies, Inc. Method for inhibiting corrosion of internal structural members of reinforced concrete. 4,342,796, Cl. 427-136.000.

Brown, Wade R.; and Pick, James M., to Eaton Corporation. Electromechanical lid latch assembly. 4,342,476, Cl. 292-201.000.

Brown, William F., to Weston Research Corporation. Coating compositions for liners of molten metal troughs and ladles. 4,342,597, Cl. 106-38.270.

Brown & Williamson Tobacco Corporation: *See*—
Sanford, Robert A., 4,342,322, Cl. 131-336.000.

Browning Engineering Corporation: *See*—
Browning, James A., 4,342,551, Cl. 431-10.000.

Browning, James A., to Browning Engineering Corporation. Ignition method and system for internal burner type ultra-high velocity flame jet apparatus. 4,342,551, Cl. 431-10.000.

Bruner, Wally. Apparatus for temporarily hanging for aligning cabinets and the like. 4,342,439, Cl. 248-544.000.

Brunn, Reiner: *See*—
Ziemek, Gerhard; Klebl, Wolfram; Hoffmann, Ernst; and Brunn, Reiner, 4,342,190, Cl. 57-293.000.

Brunninger, Manfred: *See*—
Theurer, Josef; and Brunninger, Manfred, 4,342,165, Cl. 37-104.000.

Brunswick Corporation: *See*—
Hassl, William D.; and Weronke, Robert B., 4,342,634, Cl. 204-197.000.

Brush, Charles K.; and Weinstock, Joseph, to SmithKline Corporation. Intermediates for preparing 6-lower alkyl-7,8-dihydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,342,686, Cl. 260-239.0BB.

Bruton, Christopher J.: *See*—
Atkinson, Anthony; Bruton, Christopher J.; Comer, Michael J.; and Sharp, Richard J., 4,342,827, Cl. 435-26.000.

Bruzinski, Edward J.: *See*—
O'Leary, James N.; and Bruzinski, Edward J., 4,342,613, Cl. 156-310.000.

Buchholz, Jeffrey C., to General Motors Corporation. On-board detection of antiknock compounds in automotive gasoline and apparatus therefor. 4,342,628, Cl. 204-1.00T.

Buckeye Cellulose Corporation, The: *See*—
Cox, Lloyd A., 4,342,392, Cl. 206-438.000.

Buckley, William D., to Perkin-Elmer Corporation, The. X-ray lithography apparatus and method of use. 4,342,917, Cl. 378-34.000.

Bucknam, Donald C. Power plant and process utilizing gravitational force. 4,342,920, Cl. 290-1.00R.

Budai, Zoltan; Magdanyi, Laszlo; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; and Kosoczky, Ibolya, to Egyt Gyogyszervegyeszeti Gyar. Basic ethers and pharmaceutical compositions containing the same. 4,342,762, Cl. 424-246.000.

Budzich, Mieczyslaw; and Fitz, Forest G. Article distributing apparatus. 4,342,386, Cl. 198-360.000.

Builders Concrete, Inc.: *See*—
Sluys, Wesley W., 4,342,276, Cl. 114-266.000.
Sluys, Wesley W., 4,342,277, Cl. 114-293.000.

Bullet, Irving, Jr.: *See*—
Morgan, Daniel, 4,342,466, Cl. 280-87.030.

Bunker Ramo Corporation: *See*—
Hutter, Harold G.; and Ramsland, August B., 4,342,496, Cl. 339-177.00E.

Burgund, Paul W. Hydrogen generation as fuel by use of solar ultraviolet light process. 4,342,738, Cl. 423-579.000.

Burke, John A., to Green, Tweed & Co., Inc. Spring seal. 4,342,463, Cl. 277-177.000.

Burlington Industries, Inc.: *See*—
Key, Worth M.; and Herkness, Wayne, 4,342,340, Cl. 139-435.000.
Teague, Edward W.; Hance, Max H.; and Neal, Carl R., 4,342,565, Cl. 8-532.000.

Burnett, William C. Method and apparatus for controlling the fall of grain through a conduit. 4,342,383, Cl. 193-32.000.

Burroughs Corporation: *See*—
Holz, George E., 4,342,993, Cl. 340-779.000.
Shima, George T., 4,342,995, Cl. 340-825.500.

Buskirk, Allan F. V.; and Moskovitch, Gadi, to Honeywell Inc. Central station alarm reporting system. 4,342,986, Cl. 340-539.000.

Buxbaum, Lothar; and Breitenfellner, Franz, to Ciba-Geigy Corporation. Glass-reinforced polyester moulding compounds. 4,342,678, Cl. 524-539.000.

B.V. Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg: *See*—
Spaans, Cornelis; and Nijhof, Herman H., 4,342,162, Cl. 37-1.000.

Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 4,343,032, Cl. 362-276.000.

Cablebus Systems Corporation: *See*—
Schrock, Clifford B.; and Gumm, Linley F., 4,343,042, Cl. 455-5.000.

Calaway, Ward M.: *See*—
Griffith, Neil J.; Jeffers, Fredrick J.; and Calaway, Ward M., 4,343,026, Cl. 360-113.000.

Calvet, Pierre; Ching, Gil; and Rolland, Philippe, to Societe pour l'Equipement de Vehicules (S.E.V.). Vortex flow rate measuring device. 4,342,232, Cl. 73-861.050.

Cama, Lovji D.: *See*—
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,757, Cl. 424-246.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,869, Cl. 544-21.000.

Campbell, Douglas R., to Imaging Systems Corporation. Developer with coated carrier material and method of making. 4,342,824, Cl. 430-108.000.

Campbell, Frederick R., to Crown Zellerbach Corporation. Box assembly system. 4,342,563, Cl. 493-168.000.

Campbell, James R.; and Anspach, Roy L., to Mahoney, Thomas P. Method of fabricating honeycomb core structure. 4,342,899, Cl. 219-78.120.

Campbell Soup Company: *See*—
Clatfelter, Kenneth A., 4,342,788, Cl. 426-243.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Vickers, Geoffrey W., 4,342,425, Cl. 239-424.000.

Cane, Charles; and Yeomans, Bertram, to BP Chemicals Limited. Dehydration of alcohols. 4,342,627, Cl. 203-19.000.

Canon Kabushiki Kaisha: *See—*
Hosono, Nagao; and Kanbe, Junichiro, 4,342,822, Cl. 430-97.000.
Shimizu, Katsuichi; Masuda, Shunichi; and Sakamaki, Hisashi, 4,343,036, Cl. 364-518.000.

Canup, Robert E.; and Alperstein, Martin, to Texaco Inc. Ignition system for an internal combustion engine employing fuel injection. 4,342,305, Cl. 123-617.000.

Caratsch, Hans-Peter, to Sinter Limited. Method and apparatus for the thermal treatment of impregnated material webs. 4,342,718, Cl. 264-345.000.

Carl Zeiss-Stiftung: *See—*
Muller, Ortwin; Biber, Klaus; Schmauder, Roland; and Spitznas, Manfred, 4,342,951, Cl. 318-625.000.

Carlesimo, John. Adjustable seal member for conduit to manhole junction. 4,342,462, Cl. 277-101.000.

Casais Alvarez, Teresa: *See—*
Garcia Clavel, Emilia; Martinez Lope, Jesus; and Casais Alvarez, Teresa, 4,342,729, Cl. 423-127.000.

Cashin Systems Corp.: *See—*
Dennis, Edmund G.; and Brandmaier, C. Edward, 4,342,182, Cl. 53-156.000.

Cassella Aktiengesellschaft: *See—*
Tappe, Horst, 4,342,688, Cl. 260-315.000.

Castelli, Mario; and Martini, Bruno, to Industrie Pirelli Societa per Azioni. Electric cable for medium voltage. 4,342,880, Cl. 174-36.000.

Catalano, Anthony W.; and Bhushan, Manjul, to University of Delaware, The. Thin film photovoltaic device. 4,342,879, Cl. 136-265.000.

Catchpole, Charles R.; and Horton, Michael E. Engine testing method and apparatus. 4,342,220, Cl. 73-49.700.

CBS Inc.: *See—*
Rhodes, Harold B.; and Murphy, James B., 4,342,246, Cl. 84-1.040.

Cecere, Mirella: *See—*
Di Toro, Vincenzo; Gozzo, Franco; Cecere, Mirella; Lorusso, Simone; and Garavaglia, Carlo, 4,342,773, Cl. 424-272.000.

Cepulis, Rimvydas L.: *See—*
Bartek, Joseph P.; Grasselli, Robert K.; and Cepulis, Rimvydas L., 4,342,698, Cl. 549-505.000.

Cernansky, Joseph S.; and Garner, Harold E., to Entex Industries, Inc. Radio controlled motorcycle. 4,342,175, Cl. 46-254.000.

Ceske plunarenske pdniky, koncern: *See—*
Jandera, Jan; and Studnicka, Jan, 4,342,225, Cl. 73-432.00R.

Chalmeton, Vincent: *See—*
Jatteau, Michel; Chalmeton, Vincent; and Pauvert, Joseph, 4,342,916, Cl. 378-4.000.

Champion International Corporation: *See—*
Chang, Cheng H., 4,342,473, Cl. 282-27.500.

Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., to Perkin-Elmer Corporation, The. Filter indexing for spectrophotometer system. 4,342,516, Cl. 356-332.000.

Chang, Cheng H., to Champion International Corporation. Pressure-sensitive copy systems containing phenolic ester as color-stabilizers. 4,342,473, Cl. 282-27.500.

Chang, Eng-Pi; Lazarz, Christine A.; and Cook, Edward H., Jr., to Hooker Chemicals & Plastics Corp. Process for forming a porous polyfluoroalkylene sheet useful for separating anolyte from catholyte in electrolytic cells. 4,342,636, Cl. 204-296.000.

Chang, I-Cheng, to Itek Corporation. Transverse tunable acousto-optic filter. 4,342,502, Cl. 350-358.000.

Chang, Long F., to Owens-Illinois, Inc. Self-supporting plastic container for liquids. 4,342,398, Cl. 215-1.00C.

Changani, Pushkumar D.; Peacock, Donald G.; and Roberts, David, to Raychem Corporation. Polymeric articles. 4,342,800, Cl. 428-36.000.

Chapin, Henry J.: *See—*
Larson, Hugo R.; Avery, Howard S.; and Chapin, Henry J., 4,342,593, Cl. 75-128.00A.

Charpentier, Roger. Magnetic return control key. 4,342,975, Cl. 335-205.000.

Cheng, Dah-Chieh O.; Bowers, Joseph S., Jr.; and Maner, Ronald J., to Eastman Kodak Company. Process for the preparation of α-halo,enated cresol esters. 4,342,877, Cl. 560-130.000.

Chercasky, Morris: *See—*
Stone, Richard S.; and Chercasky, Morris, 4,342,973, Cl. 335-2.000.

Chervenak, Michael C.: *See—*
Reif, Henry E.; Maruhnic, Peter; and Chervenak, Michael C., 4,342,641, Cl. 208-89.000.

Chevron Research Company: *See—*
Kyan, Chwan P., 4,342,643, Cl. 208-134.000.
Lewis, Robert T., 4,342,640, Cl. 208-11.00R.

Ching, Gil: *See—*
Calvet, Pierre; Ching, Gil; and Rolland, Philippe, 4,342,232, Cl. 73-861.050.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt: *See—*
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,342,871, Cl. 546-65.000.

Chirikjian, Jack G., to Bethesda Research Laboratory. Immobilized restriction endonucleases. 4,342,833, Cl. 435-178.000.

Chittenden, Richard M., to Abbott Laboratories. Catheter insertion device. 4,342,313, Cl. 128-214.400.

Choly, Mitchell: *See—*
Akeel, Hadi K. A.; Bartlett, Donald S.; Beaulieu, Theodore J.; and Choly, Mitchell, 4,342,536, Cl. 414-744.00A.

Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, to Merck & Co., Inc. Cephalosporin antibiotic compositions. 4,342,757, Cl. 424-246.000.

Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, to Merck & Co., Inc. Cephalosporin antibiotics. 4,342,869, Cl. 544-21.000.

Christensen, Helge K.: *See—*
Andersen, Hans S.; Christensen, Helge K.; and Christiansen, Preben, 4,342,256, Cl. 91-420.000.

Christiansen, Preben: *See—*
Andersen, Hans S.; Christensen, Helge K.; and Christiansen, Preben, 4,342,256, Cl. 91-420.000.

Chu, Nori Y. C.: *See—*
Hovey, Richard J.; Chu, Nori Y. C.; Piusz, Peter G.; and Fuchsman, Charles H., 4,342,668, Cl. 252-586.000.

Chung, Rack H.: *See—*
Suh, John T.; Chung, Rack H.; Wang, Nai-Yi; and Barton, Jeffrey N., 4,342,692, Cl. 260-326.460.

Chute, Richard; and Horan, Ralph P., to Eaton Corporation. Vapor compression liquid treating system. 4,342,624, Cl. 202-176.000.

Ciba-Geigy Corporation: *See—*
Buxbaum, Lothar; and Breitenfellner, Franz, 4,342,678, Cl. 524-539.000.
Drabek, Jozef; and Boger, Manfred, 4,342,778, Cl. 424-285.000.
Ilvespaa, Atso; Frei, Jorg; and Schweizer, Ernst, 4,342,764, Cl. 424-248.560.

Cincinnati-Milacron, Inc.: *See—*
Gough, Robert G., 4,342,875, Cl. 560-64.000.

CIR S.p.A. Divisione Sasib: *See—*
Zullo, Antonio, 4,342,321, Cl. 131-282.000.

Citrin, Paul S., to Dynatech Laboratories, Incorporated. Liquid dispensing apparatus. 4,342,407, Cl. 222-485.000.

Claassen, Josephus A. M., to Hydraudyne B.V. Counterbalancing hydraulic system. 4,342,164, Cl. 37-73.000.

Clague, Robert E.; Hammar, Richard H.; and Harvey, Douglas J., to General Motors Corporation. Method of making a negative lead-acid storage battery plate. 4,342,343, Cl. 141-1.100.

Clancy, John F.; and Welter, Clarence L., to G & W Electric Specialty Company. Modular vault-type load break switch. 4,342,889, Cl. 200-144.00R.

Clark, Amos S., Jr.; McMordie, James R.; and Walker, Michael D., to Bahnson Company, The. Travelling suction cleaning apparatus. 4,342,130, Cl. 15-312.00A.

Clark, Lancelot P., to Clarks Limited. Footwear. 4,342,160, Cl. 36-83.000.

Clarks Limited: *See—*
Clark, Lancelot P., 4,342,160, Cl. 36-83.000.

Clatfelter, Kenneth A., to Campbell Soup Company. Method of cooking chicken parts. 4,342,788, Cl. 426-243.000.

Clifford, David P.; and Sewell, Robert A., to Dow Chemical Company Limited. Optically active isomers of substituted pyridine methyl esters of cyclopropane carboxylic acid and their use as insecticides. 4,342,770, Cl. 424-263.000.

Codex Corporation: *See—*
Forney, George D., Jr., 4,343,041, Cl. 375-14.000.

Cohnen, Wolfgang: *See—*
Idel, Karsten; Cohnen, Wolfgang; and Freitag, Dieter, 4,342,681, Cl. 524-108.000.

Cole, Francis X., to Collaborative Research, Inc. Immunoassay products and methods. 4,342,826, Cl. 435-7.000.

Cole, Saxon, to American Air Filter Company, Inc. Pitch diameter gauge for a variable speed pulley. 4,342,153, Cl. 33-169.00B.

Coleman, John D., to Commonwealth Scientific and Industrial Research Organ. Curtain coating method. 4,342,423, Cl. 239-1.000.

Colgate-Palmolive Company: *See—*
Gaffar, Abdul, 4,342,857, Cl. 525-326.400.

Collaborative Research, Inc.: *See—*
Cole, Francis X., 4,342,826, Cl. 435-7.000.

Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Bradshaw, John; and Hayes, Norman F., to Glaxo Group Limited. Aminocyclopentane alkenoic acids and esters and pharmaceutical compositions. 4,342,756, Cl. 424-244.000.

Collins, John F., to Preiser Scientific, Incorporated. Oxygen supply apparatus. 4,342,725, Cl. 422-126.000.

Collins, John J., to Nicholl Brothers, Inc. Battery protection circuit. 4,342,953, Cl. 320-13.000.

Colloids, Inc.: *See—*
Mann, William F.; and Smith, Thomas J., 4,342,599, Cl. 106-100.000.

Colt Industries Operating Corp: *See—*
Smitley, Marion L., 4,342,371, Cl. 180-165.000.
Wakeman, Russell J., 4,342,443, Cl. 251-137.000.

Columbian Chemicals Company: *See—*
Estopinal, Earl J., Jr., 4,342,736, Cl. 423-450.000.

Combustion Engineering, Inc.: *See—*
Keating, Stephen J., Jr., 4,342,621, Cl. 376-298.000.
Pollock, William H., 4,342,286, Cl. 122-336.000.
Vickrey, Richard A., 4,342,620, Cl. 376-272.000.

Comer, Michael J.: *See—*
Atkinson, Anthony; Bruton, Christopher J.; Comer, Michael J.; and Sharp, Richard J., 4,342,827, Cl. 435-26.000.

Commissariat a l'Energie Atomique: *See—*
Pomie, Pierre; and Verriere, Philippe, 4,342,721, Cl. 376-298.000.

Commonwealth Industrial Gases Limited, The: *See—*
McMillan, Fraser; Guthrie, Graeme J.; and Williams, David J., 4,342,647, Cl. 209-3.000.

Commonwealth Scientific and Industrial Research Organ.: *See*—
Coleman, John D., 4,342,423, Cl. 239-1.000.
Concepcion, Jose Ma. R. Method and apparatus for utilizing alcohol as fuel for internal combustion engine. 4,342,287, Cl. 123-1.00A.
Conner, Alvin J., Sr. Non-petroleum based metal corrosion inhibitor. 4,342,596, Cl. 106-14.130.
Conner, Donald E.; and Fogel, Arnold W., to Van Dyk & Company, Inc. Benzene sulfonate quaternary ammonium salts. 4,342,706, Cl. 260-501.150.
Container Corporation of America: *See*—
Bethune, Billy R.; and Dearing, Charles C., 4,342,389, Cl. 206-288.000.
Philips, Nicholas A., 4,342,416, Cl. 229-23.0BT.
Continental Disc Corporation: *See*—
Thompson, Leonard K.; and Corbett, William H., 4,342,988, Cl. 340-679.000.
Continental Group, Inc., The: *See*—
Krishnakumar, Suppayan M.; Pocock, John F. E.; Mahajan, Gautam K.; and Trembly, John F., 4,342,895, Cl. 219-10.430.
Control Data Corporation: *See*—
Harte, Kenneth J.; and Dougherty, Edward C., 4,342,949, Cl. 315-409.000.
Conway, George E., to Beckman Instruments, Inc. Safety cover for centrifuge bucket. 4,342,419, Cl. 233-1.00A.
Cook, Edward H., Jr.: *See*—
Chang, Eng-Pi; Lazarz, Christine A.; and Cook, Edward H., Jr., 4,342,636, Cl. 204-296.000.
Cooley, Donald B., to Standard Car Truck Co. Railroad car truck bolster. 4,342,266, Cl. 105-226.000.
Cooper, Keith A.: *See*—
Gordon, Robert L.; Naugle, George H.; and Cooper, Keith A., 4,342,183, Cl. 53-433.000.
Coors Container Company: *See*—
McMillin, Danny L.; and Stirbis, James S., 4,342,281, Cl. 118-32.000.
Cope, Leonard D.: *See*—
Baer, Ralph H.; Cope, Leonard D.; and Mortimer, Thomas J., 4,342,454, Cl. 273-85.00G.
Coplan, Myron J.: *See*—
Lopatin, George; Coplan, Myron J.; and Walton, James P., Jr., 4,342,811, Cl. 428-220.000.
Corbett, William H.: *See*—
Thompson, Leonard K.; and Corbett, William H., 4,342,988, Cl. 340-679.000.
Corner, Frank G.; and Wilkinson, Robert E., to Fleetwood Enterprises, Inc. Trailer suspension systems. 4,342,469, Cl. 280-718.000.
Costruzioni Aereonautiche Giovanni Agusta S.p.A.: *See*—
Lovera, Bruno; Pancotti, Santino; Pariani, Emilio; and Virtuani, Giuseppe, 4,342,540, Cl. 416-140.000.
Councilman, Clyde L.; and Alter, Larry D., to E-Systems, Inc. Continuously variable surface acoustic wave delay line. 4,342,971, Cl. 333-152.000.
Cox, Joseph A.; and Jones, Daniel K., to EA Industries, Incorporated. Method and apparatus for handling bricks. 4,342,531, Cl. 414-46.000.
Cox, Lloyd A., to Buckeye Cellulose Corporation, The. Wrap for sterile articles. 4,342,392, Cl. 206-438.000.
Coyle, Forrest E.: *See*—
Henningsen, Tom; Coyle, Forrest E.; and Moates, Roger D., 4,342,908, Cl. 250-227.000.
Cozzi, Paolo; Mongelli, Nicola; Pillan, Antonio; Bergamaschi, Maria; and Lovisolo, Pier P., to Farmitalia Carlo Erba S.p.A. 3-(1-Imidazolyl)-derivatives of 2,3-dihydro-4H-1-benzopyran. 4,342,775, Cl. 424-273.00R.
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., to Merck & Co., Inc. 4-Substituted-3-hydroxy-3-pyrroline-2,5-dione inhibitors of glycolic acid oxidase. 4,342,776, Cl. 424-274.000.
Cragoe, Edward J., Jr., to Merck & Co., Inc. 1-(Substituted-aminoalkoxyphenyl)-2-methylene-1-alkanones, compositions and use thereof. 4,342,782, Cl. 424-330.000.
Creusot-Loire: *See*—
Pere, Gerard, 4,342,544, Cl. 417-269.000.
Cripe, Alan R.: *See*—
Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,342,264, Cl. 105-215.00C.
Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,342,265, Cl. 105-215.00C.
Cripe, Christopher A.: *See*—
Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,342,264, Cl. 105-215.00C.
Hindin, Eugene; Cripe, Alan R.; and Cripe, Christopher A., 4,342,265, Cl. 105-215.00C.
Cripps, Michael W.; and Lee, Raymond. Fish hook disgorger. 4,342,171, Cl. 43-53.500.
Croley, Thomas E., to Willamette Industries, Inc. Rectangular fiberboard container for bulk material with funnel-like dispensing bottom. 4,342,405, Cl. 222-105.000.
Crown Zellerbach Corporation: *See*—
Campbell, Frederick R., 4,342,563, Cl. 493-168.000.
Reba, Imants, 4,342,413, Cl. 226-97.000.
Cruse, William A.; and Isenhour, John H., Jr., to Isenhour Brick & Tile Co., Inc. Method and apparatus for making textured bricks. 4,342,719, Cl. 264-504.000.
Cure, Omer, to Electro-Nite Co. Oxygen sensor. 4,342,633, Cl. 204-195.00S.
Cyr, Gilman N.: *See*—
Havemeyer, Ruth N.; and Cyr, Gilman N., 4,342,784, Cl. 424-337.000.
Daeco Fuels and Engineering Company: *See*—
Lowi, Alvin, Jr., 4,342,200, Cl. 62-191.000.
Dahlstrom, Donald A., to Envirotech Corporation. Flashed-down residue treatment including filtering and solvent repulping. 4,342,638, Cl. 208-8.00R.
Dahm, Manfred: *See*—
Illger, Hans-Walter; Dahm, Manfred; and Gonzalez-Dorner, Alberto C., 4,342,798, Cl. 427-244.000.
Daiello, Cosimo D.: *See*—
Rick, Randy L.; Mazzotta, Paul F.; and Daiello, Cosimo D., 4,342,323, Cl. 132-37.00R.
Danfoss, A/S: *See*—
Andersen, Hans S.; Christensen, Helge K.; and Christiansen, Preben, 4,342,256, Cl. 91-420.000.
Daniels, Michael J., to Tate & Lyle Limited. Crystalline glucose and process for its production. 4,342,603, Cl. 127-30.000.
Danilevich, Yanush B.: *See*—
Glebov, Igor A.; Danilevich, Yanush B.; Ivanov, Sergeia A.; Karymov, Anatoly A.; Kotlyarova, Galina A.; Sapozhnikov, Vladimir A.; and Shakhtarin, Valentin N., 4,342,932, Cl. 310-52.000.
Darlington, William B.: *See*—
Du Bois, Donald W.; and Darlington, William B., 4,342,629, Cl. 204-98.000.
Darnell, William R.: *See*—
Jackson, Winston J., Jr.; and Darnell, William R., 4,342,862, Cl. 528-176.000.
Das, Dilip K.: *See*—
Kumar, Kaplesh; and Das, Dilip K., 4,342,734, Cl. 423-298.000.
Date, K. Henry; and Wainio, Ronald, to McGraw-Edison Company. Load break switch. 4,343,030, Cl. 361-335.000.
Dauterman, David C.: *See*—
Meyer, Larry P.; and Dauterman, David C., 4,342,424, Cl. 239-233.000.
David, Agoston: *See*—
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,342,871, Cl. 546-65.000.
David Engineering Limited: *See*—
Samuels, Philip R., 4,342,948, Cl. 315-290.000.
Davidson, Donald H.; and Huff, Ray V., to Kennecott Corporation. Well stimulation for solution mining. 4,342,484, Cl. 299-5.000.
Davis, Irwin J.: *See*—
Perlinski, Witold; Davis, Irwin J.; and Romanick, John F., 4,342,843, Cl. 523-409.000.
Davis, Maxie C. Heating and cooling system using frictional air heating. 4,342,422, Cl. 237-19.000.
Davy Inc.: *See*—
Bohanszky, Victor A., 4,342,555, Cl. 432-115.000.
Dearing, Charles C.: *See*—
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Hayes, Stanley G., 4,342,372, Cl. 180-182.000.
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Demi, Roy C., to Robertshaw Controls Company. Burner valve control device, an electrical switch unit therefor and methods of making the same. 4,342,886, Cl. 200-61.860.
Denman, Dennis, to Kennametal Inc. Rotary drills and drill bits. 4,342,368, Cl. 175-410.000.
Denningham, Clarence E. Vehicle entry locking arrangement. 4,342,210, Cl. 70-278.000.
Dennis, Edmund G.; and Brandmaier, C. Edward, to Cashin Systems Corp. Card folding and creasing device. 4,342,182, Cl. 53-156.000.
Dennison, Clifford C. Modular automatic water distiller. 4,342,625, Cl. 202-181.000.
Denny, Richard W.; and Diddens, Paul A., to Honeywell Inc. Recorder control circuit for suppressing incipient arcing at the heating electrodes. 4,343,010, Cl. 346-110.00R.
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De Santis, Louis, Jr.: *See*—
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Desjardins, Paul A., to Firecom, Inc. Remote sensing and control system. 4,342,985, Cl. 340-525.000.
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Deutsch, Ralph; and Deutsch, Leslie J., to Kawai Musical Instrument Mfg. Co., Ltd. Orchestra chorus in an electronic musical instrument. 4,342,248, Cl. 84-1.240.
Diamond, Howard; Enzer, Steven E.; and Flowers, Joseph, Jr., to Transidyne General Corp. Apparatus for electrochemical measurements. 4,342,964, Cl. 324-450.000.

Dickey Manufacturing Company: *See*—
McClure, Kenneth R., 4,342,477, Cl. 292-307.00R.
Diddens, Paul A.: *See*—
Denny, Richard W.; and Diddens, Paul A., 4,343,010, Cl. 346-110.00R.
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Di Toro, Vincenzo; Gozzo, Franco; Cecere, Mirella; Lorusso, Simone; and Garavaglia, Carlo, to Montedison S.p.A. N-Aryl-1,3-oxazolidine-2,4-diones exerting a fungicidal, systemic action in the field. 4,342,773, Cl. 424-272.000.
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Ritter, Horst, 4,342,731, Cl. 423-234.000.
Doehnert, Donald F., to Permacel. Pressure-sensitive adhesive tape having a release coating. 4,342,815, Cl. 428-522.000.
Doguchi, Nobushige, to Yoshida Kogyo K.K. Method of manufacturing a thermally insulating sash bar. 4,342,144, Cl. 29-155.00R.
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Dow Chemical Company, The: *See*—
Blanchard, Robert R.; and Bourne, Tommy R., 4,342,848, Cl. 525-231.000.
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Dow Chemical Company Limited: *See*—
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Doyle, Thomas P. Wiper device for removal of snow and liquid from ski glasses or goggles. 4,342,128, Cl. 15-245.000.
Drabek, Jozef; and Boger, Manfred, to Ciba-Geigy Corporation. Insecticidal (2,3-dihydro-2,2-dimethylbenzofuran-7-yloxy-N-methylcarbamoyl)-(N'-alkoxycarbamoyl)-sulphides. 4,342,778, Cl. 424-285.000.
Drakulic, John. Water pump housing. 4,342,290, Cl. 123-41.470.
Drewitz, Hans-Jurgen: *See*—
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Du Bois, Donald W.; and Darlington, William B., to PPG Industries, Inc. Solid polymer electrolyte chlor-alkali process. 4,342,629, Cl. 204-98.000.
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Durand, Pierre; and Gloriod, Pierre, to Societe Chimique des Charbonnages—CdF Chimie. Process for manufacturing ethylene polymers. 4,342,853, Cl. 526-68.000.
Duval Corporation: *See*—
Lamb, Frank E., 4,342,592, Cl. 75-118.00R.
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Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,342,873, Cl. 546-186.000.
Dymar Industries, Inc.: *See*—
Jungles, Donald S., 4,342,402, Cl. 220-343.000.
Dynapac Maskin AB: *See*—
Tunebiom, Eskil, 4,342,485, Cl. 299-39.000.
Dynatech Laboratories, Incorporated: *See*—
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Havemeyer, Ruth N.; and Cyr, Gilman N., 4,342,784, Cl. 424-337.000.
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EA Industries, Incorporated: *See*—
Cox, Joseph A.; and Jones, Daniel K., 4,342,531, Cl. 414-46.000.
Earl, Edward: *See*—
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Eastman Kodak Company: *See*—
Allen, Robert P.; and Ruggles, Albert C., 4,342,850, Cl. 525-339.000.
Brewer, Richard J.; and Bogan, Richard T., 4,342,865, Cl. 536-76.000.
Cheng, Dah-Chieh O.; Bowers, Joseph S., Jr.; and Maner, Ronald J., 4,342,877, Cl. 560-130.000.
Guild, John R., 4,342,151, Cl. 29-827.000.
Jackson, Winston J., Jr.; and Darnell, William R., 4,342,862, Cl. 528-176.000.
Marcus, Michael A.; and Lee, James K., 4,342,936, Cl. 310-330.000.
Eaton Corporation: *See*—
Bestard, Thomas L.; and Roesler, Richard R., 4,342,534, Cl. 414-734.000.
Brown, Wade R.; and Pick, James M., 4,342,476, Cl. 292-201.000.
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McVeigh, Peter J.; and Rudish, Ronald M., 4,343,006, Cl. 343-854.000.
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Eaton, Gerald E.; Shtarkman, Emile M.; and Snyder, Daniel S., to Gould Inc. Self-leveling viscous elastic damper. 4,342,446, Cl. 267-35.000.
Ebner, Peter R., to Itek Corporation. LED-Fiber optic character printer. 4,342,504, Cl. 354-7.000.
Edamura, Mizuo: *See*—
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,342,918, Cl. 422-186.040.
Edmondson, Richard; and Wisebaker, Dale A., to National Machinery Company, The. Load detecting probe. 4,342,233, Cl. 73-862.060.
Edwards, Robert G., to Interco Incorporated. Metatarsal guard safety shoe. 4,342,159, Cl. 36-77.00R.
Eftekhar, Nas S. Bow type traction device having corporeal insertion means. 4,342,309, Cl. 128-84.00R.
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Nagel, Ferenc, 4,342,937, Cl. 313-113.000.
Egyt Gyogyszervegyeszeti Gyar: *See*—
Berenyi nee Poldermann, Edit; Gorog, Peter; Grasser, Katalin; Kosoczky, Ibolya; Koracs nee Palotay, Agnes; and Petocz, Lujza, 4,342,766, Cl. 424-249.000.
Budai, Zoltan; Magdanyi, Laszlo; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; and Kosoczky, Ibolya, 4,342,762, Cl. 424-246.000.
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Patnaik, Birendra K., 4,342,856, Cl. 526-125.000.
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Eli Lilly and Company: *See*—
Kastner, Ralph E.; and Hamil, Robert L., 4,342,829, Cl. 435-118.000.
Moore, Richard E.; and Mynderse, Jon S., 4,342,751, Cl. 424-177.000.
Elliott, Brian J.; Hearn, Eric W.; and Markovits, Gary, to International Business Machines Corporation. Technique for predicting oxygen precipitation in semiconductor wafers. 4,342,616, Cl. 156-601.000.
Ellis, Benjamin C., Jr., to Western Electric Company, Inc. Apparatus for depositing cable. 4,342,434, Cl. 242-82.000.
Emeott, Marvin: *See*—
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Emerson Electric Co.: *See*—
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Engel, Rudolf; and Meier, Horst P., to Engel & Meier oHG. Turn indicator for ships or aircraft. 4,342,226, Cl. 73-504.000.
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Ennis, Brian J.; and Lydall, Kenneth, to English Card Clothing Company, The. Opening roller for open-end spinning apparatus. 4,342,137, Cl. 19-97.000.
Entex Industries, Inc.: *See*—
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Dahlstrom, Donald A., 4,342,638, Cl. 208-8.00R.
Enz, Ulrich E., to U.S. Philips Corporation. Magnetic bubble domain structure. 4,343,038, Cl. 365-36.000.
Enzer, Steven E.: *See*—
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Erickson, Alve J.: *See*—
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Erickson, Ernest A.; Hanson, Rodger D.; and Mews, Lance D., to Tenneco Inc. Muffler with three part welded joint. 4,342,373, Cl. 181-266.000.
Erickson, Lennart G.; and Worne, Howard E. Organic sludge-energy recycling method. 4,342,650, Cl. 210-606.000.
Erickson, Wayne K., to Phillips Petroleum Company. Method for the production of a fused nonwoven fabric. 4,342,813, Cl. 428-296.000.
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Ettmayer, Peter; and Kieffer, Richard, to Sandvik Aktiebolag. Cemented carbide. 4,342,594, Cl. 75-203.000.
Evans, Gary E., to Westinghouse Electric Corp. Array modification that adds height capability to a 2D array radar. 4,342,997, Cl. 343-16.00R.
Evans, John H., to Stant Inc. Locking gas cap with torque override feature. 4,342,208, Cl. 70-165.000.
Evans, John W.; Young, Gary C.; and Stager, Charles W., to Nutrisearch Company. Production of a stable lactose product. 4,342,604, Cl. 127-31.000.
Evans Products Company: *See*—
Blout, Bennett O., 4,342,267, Cl. 105-282.00P.
Everdyke, Wayne D.: *See*—
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Everts, Robert G. Crankshaft with laminated counterweight. 4,342,236, Cl. 74-603.000.
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Pruett, Roy L.; and Bradley, John S., 4,342,838, Cl. 518-713.000.
Eyden, Everett A. Concrete deck forming apparatus. 4,342,440, Cl. 249-19.000.
Faber, Marcel D.; Ernst, Richard H.; and Lefebvre, Philip H., to American Can Company. Fermentable acid hydrolyzates and fermentation process. 4,342,831, Cl. 435-163.000.
Fagnant, Norman A.; and Young, James L., to Nelmor Company, Inc. Rotary parts separator. 4,342,396, Cl. 209-546.000.
Farinacci, Anthony L., to United States of America, Army. High altitude platform air drop system. 4,342,437, Cl. 244-137.00R.
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Cozzi, Paolo; Mongelli, Nicola; Pillan, Antonio; Bergamaschi, Maria; and Lovisolo, Pier P., 4,342,775, Cl. 424-273.00R.
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Firecom, Inc.: *See*—
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Firestone, Raymond A., to Merck & Co., Inc. Allylsulfoxide enzyme inhibitors. 4,342,758, Cl. 424-246.000.
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Leivenzon, Simon; and Leivenzon, Steven, 4,342,354, Cl. 160-133.000.
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Fishbaugh, Warren D.; Batty, W. Lawson, Jr.; and Freedman, Frank J., to Sybron Corporation. Method and apparatus for molding indicia in roto-molded plastic containers. 4,342,716, Cl. 264-225.000.
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Corner, Frank G.; and Wilkinson, Robert E., 4,342,469, Cl. 280-718.000.
Fletcher, Laird C.; and Beard, Harold J., to Delta Central Refining, Inc. Method of rerefining used lubricating oil. 4,342,645, Cl. 208-184.000.
Fletcher-Terry Company, The: *See*—
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FMC Corporation: *See*—
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Han, Ching C.; Bilenko, Herman W.; and Hwang, Yeongming, 4,343,005, Cl. 343-781.00P.
Luh, Howard H., 4,343,002, Cl. 343-753.000.
Forney, George D., Jr., to Codex Corporation. Modem circuitry. 4,343,041, Cl. 375-14.000.
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Thompson, Edwin R., 4,342,147, Cl. 29-417.000.
Foshee, William R., to Best Lock Corporation. Knob-connector spring. 4,342,478, Cl. 292-352.000.
Fowler, J. Alan; Haller, George S.; and Rogers, C. David, to United States Steel Corporation. Automatic roof bolting drill retention apparatus. 4,342,487, Cl. 308-3.900.
Fox, Forrest. Method and apparatus for zeroing and calibrating an invasive blood pressure monitoring system. 4,342,218, Cl. 73-4.00R.
Frame, Wayne W., to Ball Corporation. Image sensor sensitivity variation compensator. 4,343,021, Cl. 358-213.000.
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Pellaton, Michel H., 4,342,930, Cl. 310-49.00R.
Frank, Pierre; and Sailer, Andre L., to P C U K Produits Chimiques Ugine Kuhlmann. Hydrosoluble pyrazolone trisazo dyestuffs derived from 4,4'-diamino-benzenesulfanilide. 4,342,684, Cl. 260-159.000.
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Freedman, Frank J.: *See*—
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Frei, Jorg: *See*—
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French, Lewis L. Focused nuclear interface survey instrument and method of determining density changes in mining and storage wells. 4,342,911, Cl. 250-258.000.
Froidh, Tor A.; and Widlund, Leif U. R., to Molnlycke Aktiebolag. Package and method and apparatus for manufacturing the same. 4,342,562, Cl. 493-124.000.
Fromknecht, Charles T., to Singer Company, The. Carpet pile sensor and indicator for carpet cleaner. 4,342,132, Cl. 15-339.000.
Fu, Chao-Hsiang; and Liu, Sheau-Ming S., to Intel Corporation. Process for forming opening having tapered sides in a plasma nitride layer. 4,342,617, Cl. 156-643.000.
Fuchsman, Charles H.: *See*—
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Fuji Photo Film Co., Ltd.: *See*—
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Fuji Photo Optical Co., Ltd.: *See*—
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Fujii, Norio; Kawahara, Atsushi; and Sawada, Masahiro, to Nippon Kogaku K.K. Automatic focusing device of a microscope. 4,342,905, Cl. 250-201.000.

Fujikura Cable Works, Ltd., The: *See*—
Usuki, Takayoshi; Endo, Yukio; Ito, Kichizo; Tuboi, Takao; and Kubota, Shin, 4,342,814, Cl. 428-383.000.

Fujino, Shinichiro: *See*—
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Fujio, Katuharu: *See*—
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Fujioka, Yoshiki: *See*—
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Fujisawa Pharmaceutical Company, Ltd.: *See*—
Hashimoto, Masashi; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; and Hagiwara, Daijiro, 4,342,760, Cl. 424-246.000.

Fujita, Takashi: *See*—
Kinashi, Takao; Fujita, Takashi; and Kawabe, Norio, 4,342,820, Cl. 430-11.000.

Fujita, Yatsuka: *See*—
Ueno, Ryuzo; Matsuda, Toshio; Inamine, Shigeo; Kanayama, Tatsuo; and Fujita, Yatsuka, 4,342,789, Cl. 426-266.000.

Fujitsu Fanuc Limited: *See*—
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,342,950, Cl. 318-611.000.

Fukase, Motonobu; Yokota, Toshikazu; and Oura, Masahisa, to Sayama Precision Industrial Co., Ltd. Medal reminant slot machine games. 4,342,384, Cl. 194-1.00C.

Fukuda, Sunichi; and Muto, Masaaki, to Rogers Corporation. Laminated bus bar and method of manufacture. 4,342,881, Cl. 174-72.00B.

Fullfgraf, Heribert: *See*—
Illmann, Joachim; and Fullfgraf, Heribert, 4,342,449, Cl. 269-43.000.

Furuitsu, Satoshi: *See*—
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,342,918, Cl. 422-186.040.

Fuzesi, Stephen; and Bayusik, John G., to Olin Corporation. Starch-amine-based polyether polyols and process of preparation. 4,342,864, Cl. 536-18.000.

G-C Dental Industrial Corp.: *See*—
Muramatsu, Hiroaki; Tomioka, Kentaro; Hirota, Kazuo; and Akahane, Shoji, 4,342,677, Cl. 523-116.000.

G & W Electric Specialty Company: *See*—
Clancy, John F.; and Welter, Clarence L., 4,342,889, Cl. 200-144.00R.

Gaffar, Abdul, to Colgate-Palmolive Company. Antigingivitis composition comprising vinyl phosphonic acid/vinyl phosphonyl fluoride copolymer. 4,342,857, Cl. 525-326.400.

Gagliardo, John P., to Feecon Corporation. Nozzle. 4,342,426, Cl. 239-457.000.

Gagnon, Joseph A. L. N.: *See*—
Shaw, David N.; and Gagnon, Joseph A. L. N., 4,342,199, Cl. 62-133.000.

Gagon, Hugh W. Process to separate bituminous material from sand (Tar Sands). 4,342,639, Cl. 208-11.0LE.

Gaiser, Ruprecht; and Stolzer, Paul, to Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft. Method and apparatus for feeding rod-like workpieces to a severing machine. 4,342,240, Cl. 83-42.000.

Galtier, Daniel: *See*—
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel, 4,342,759, Cl. 424-246.000.

Galves, Jean P.; Merloz, Pierre; and Sagnard, Jean, to Thompson-CSF. Directional filter for a display screen, the method for manufacturing same and a display system, a cathode-ray tube in particular, provided with such a filter. 4,342,821, Cl. 430-12.000.

Gambro Dialysatoren KG: *See*—
Rosemeier, Friedrich; and Kerber, Helmut, 4,342,420, Cl. 233-28.000.

Games, John E.; and Hmelovsky, Michael W., to Otis Elevator Company. Time controlled elevator door motion. 4,342,379, Cl. 187-29.00R.

Gangal, Subhash V., to Du Pont de Nemours, E. I., and Company. Process for preparing aqueous dispersion of polytetrafluoroethylene. 4,342,675, Cl. 524-762.000.

Ganoung, David P. Engine and transmission control apparatus. 4,342,298, Cl. 123-344.000.

Gant, Leroy A. Voltage regulator for a fixed field A.C. generator. 4,342,955, Cl. 322-25.000.

Garavaglia, Carlo: *See*—
Di Toro, Vincenzo; Gozzo, Franco; Cecere, Mirella; Lorusso, Simone; and Garavaglia, Carlo, 4,342,773, Cl. 424-272.000.

Garcia Clavel, Emilia; Martinez Lope, Jesus; and Casais Alvarez, Teresa, to Martinez Lope, Jesus; and Garcia Clavel, Emilia. Method for obtaining alumina from clays. 4,342,729, Cl. 423-127.000.

Gardner, Derek, to Borg-Warner Limited. Automotive drive system with continuously variable transmission. 4,342,238, Cl. 74-689.000.

Gardner, Victor T., to HPM Corporation. Injection moulding method and apparatus with mould runner reservoir and shot extension. 4,342,717, Cl. 264-328.800.

Garner, Harold E.: *See*—
Cernansky, Joseph S.; and Garner, Harold E., 4,342,175, Cl. 46-254.000.

Garrett, Thomas B.; Herweh, John E.; and Magnusson, Alan B., to Armstrong World Industries, Inc. 7-Dimethylamino-3-substituted-2,2'-spirobi[2H-1-benzopyrans]. 4,342,696, Cl. 549-331.000.

Gates, Donald C., to Alloway Manufacturing, Inc. Folding tool bar. 4,342,367, Cl. 172-776.000.

Gehrke, Gunter: *See*—
Steinbeck, Werner; and Gehrke, Gunter, 4,342,701, Cl. 260-383.000.

Geller, Martin; and Doyle, Russell. Carwash door. 4,342,355, Cl. 160-331.000.

Genentech, Inc.: *See*—
Goeddel, David V.; and Heyneker, Herbert L., 4,342,832, Cl. 435-172.000.

General Dynamics, Pomona Division: *See*—
Hagelberg, Allen C.; and Allardt, Clark E., 4,342,252, Cl. 89-1.812.

General Electric Company: *See*—
Archer, William R., 4,342,956, Cl. 323-289.000.
Baliga, Bantval J.; and Shealy, James R., 4,343,015, Cl. 357-55.000.
DiMassimo, Donald V.; and May, John B., 4,342,922, Cl. 307-66.000.
Graff, William A.; and Thomas, George L., 4,342,553, Cl. 431-358.000.
Kirkpatrick, Robert G.; and Jarvis, Stephen A., 4,342,253, Cl. 89-12.000.
McLennan, Lloyd K.; and Lacell, Albert, 4,343,043, Cl. 455-231.000.
McVey, Charles I., 4,342,939, Cl. 313-174.000.
Myers, Richard T.; and Roberson, David L., 4,342,969, Cl. 333-33.000.
Pfeifer, George F.; Koonce, George R.; and Phillips, Jack E., 4,342,910, Cl. 250-237.00G.
Sawada, Fred H., 4,342,960, Cl. 324-158.0MG.
Strok, Jack M., 4,342,938, Cl. 313-174.000.
Wolfrey, Austin A., 4,342,673, Cl. 523-427.000.

General Foods France S.A.: *See*—
Rebaudieres, Paul; and Azzi, Jean-Michel, 4,342,787, Cl. 426-103.000.

General Motors Corporation: *See*—
Akeel, Hadi K. A.; Bartlett, Donald S.; Beaulieu, Theodore J.; and Choly, Mitchell, 4,342,536, Cl. 414-744.00A.
Allen, Karl D.; Perlick, Mark A.; and Van Gorder, Jack H., 4,342,543, Cl. 417-211.500.
Bartlett, Donald S.; and Beaulieu, Theodore J., 4,342,535, Cl. 414-744.00A.
Benton, Robert L., 4,342,235, Cl. 74-424.80R.
Buchholz, Jeffrey C., 4,342,628, Cl. 204-1.00T.
Clague, Robert E.; Hammar, Richard H.; and Harvey, Douglas J., 4,342,343, Cl. 141-1.100.
Gray, Leo A., 4,342,427, Cl. 239-585.000.
Haka, Raymond J., 4,342,299, Cl. 123-396.000.
House, Ronnalee; and Johnson, Byron W., 4,342,292, Cl. 123-146.50A.
Koral, Joseph F.; Shargabian, Karl S.; and Strem, Ervin H., Jr., 4,342,482, Cl. 296-221.000.
Kosek, Thomas P., 4,342,428, Cl. 239-651.000.
Matthes, William R., 4,342,300, Cl. 123-430.000.
Melinat, Wolfgang, 4,342,380, Cl. 188-71.100.
Paddock, Gordon R.; and Jones, John E., 4,342,194, Cl. 60-290.000.
Perkins, William J.; Vest, William C.; Grannen, Walter A., III; and Meyer, Robert E., 4,342,442, Cl. 249-67.000.
Rehfeld, Frederick L. J., 4,342,546, Cl. 418-47.000.
Schuster, David A., 4,342,545, Cl. 418-26.000.
Wheadon, Ellis G., 4,342,342, Cl. 141-1.100.
Widdowson, Richard E., 4,342,421, Cl. 236-92.00B.

GenRad, Inc.: *See*—
Skilling, James K., 4,342,959, Cl. 324-73.0PC.

Gentry, Cecil C.; and Small, William M., to Phillips Petroleum Company. Rod baffled heat exchanger. 4,342,360, Cl. 165-67.000.

George Koch Sons, Inc.: *See*—
Koch, Robert L., II, 4,342,615, Cl. 156-563.000.

Gerber, Jurgen: *See*—
Reinecke, Udo; and Gerber, Jurgen, 4,342,254, Cl. 91-6.000.

Gerlach, Heinz; and Woerner, Lothar, to Kautt & Bux KG. Electrical commutator. 4,342,933, Cl. 310-234.000.

Gerlach, Klaus; Mathes, Nikolaus; Pitowski, Hans-Jurgen; and Wechs, Friedbert, to Akzona Incorporated. Suede-like sheet material. 4,342,801, Cl. 428-91.000.

Gibbs, Frankie U. Easel board used in photographic printing. 4,342,513, Cl. 355-74.000.

Gibco International Corporation: *See*—
Gibson, Adler E.; and Kellert, Paul H., 4,342,180, Cl. 52-741.000.

Gibson, Adler E.; and Kellert, Paul H., to Gibco International Corporation. Assembly method of constructing a building. 4,342,180, Cl. 52-741.000.

Giessner, Frank: *See*—
Bader, Leonhard; Giessner, Frank; Rombach, Friedrich B.; and Winter, Hermann, 4,343,013, Cl. 346-140.00R.

Gilbert, Sam. Shock absorbing partially liquid-filled cushion for shoes. 4,342,157, Cl. 36-29.000.

Gimbel, Howard V. Intraocular lens system. 4,342,123, Cl. 3-13.000.

Gladh, Arne I. L., to Billerud Uddeholm Aktiebolag. Adjustable paper machine headbox with adjustment sensing means. 4,342,619, Cl. 162-262.000.

Glaxo Group Limited: *See*—
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Bradshaw, John; and Hayes, Norman F., 4,342,756, Cl. 424-244.000.

Glebov, Igor A.; Danilevich, Yanush B.; Ivanov, Sergeia A.; Karymov, Anatoly A.; Kotlyarova, Galina A.; Sapozhnikov, Vladimir A.; and Shakhtarin, Valentin N. Rotor of cryogenic electrical machine. 4,342,932, Cl. 310-52.000.

Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, to Bayer Aktiengesellschaft. Process for the preparation of cationic dyestuffs. 4,342,867, Cl. 542-417.000.

Glennie, William L., to Mitchell, Jack M., a part interest. Boot for sealing ruptured gas or water mains and tool for application. 4,342,338, Cl. 138-99.000.

Globe-Union Inc.: *See*—
Karnowski, Gary A.; and Sriramamurty, Durvasula V., 4,342,963, Cl. 324-431.000.

Gloriod, Pierre: *See*—
Durand, Pierre; and Gloriod, Pierre, 4,342,853, Cl. 526-68.000.

Godtfredsen, Wagn O.; and von Daehne, Welf, to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab). β-Lactam compounds, antibacterial compositions thereof and method of use. 4,342,772, Cl. 424-271.000.

Goeddel, David V.; and Heyneker, Herbert L., to Genentech, Inc. Method of constructing a replicable cloning vehicle having quasi-synthetic genes. 4,342,832, Cl. 435-172.000.

Goldberg, Richard J. High resolution developed color film. 4,342,819, Cl. 430-8.000.

Goldkuhle, Gerhard, to Licentia Patent-Verwaltungs-GmbH. Video coding system for mail shipments. 4,343,016, Cl. 358-1.000.

Gonzalez-Dorner, Alberto C.: *See*—
Illger, Hans-Walter; Dahm, Manfred; and Gonzalez-Dorner, Alberto C., 4,342,798, Cl. 427-244.000.

Goode, Henry C.: *See*—
Kapura, Edward M.; and Goode, Henry C., 4,342,583, Cl. 65-99.500.

Goodwin, Nolen R., to Taylor Machine Works, Inc. Fork attachment means for lift trucks. 4,342,377, Cl. 187-9.00R.

Gordon, Harry W., to Schmid Labs., Inc. Method for treating benign prostatic hypertrophy with N-acyl amphotericin B. 4,342,750, Cl. 424-122.000.

Gordon, Robert L.; Naugle, George H.; and Cooper, Keith A., to International Paper Company. Process for making a container for storing food. 4,342,183, Cl. 53-433.000.

Gorman-Rupp Company, The: *See*—
Wolford, Dale E.; and York, George S., 4,342,538, Cl. 415-170.00A.

Gorog, Peter: *See*—
Berenyi nee Poldermann, Edit; Gorog, Peter; Grasser, Katalin; Kosoczky, Ibolya; Koracs nee Palotay, Agnes; and Petocz, Lujza, 4,342,766, Cl. 424-249.000.

Gotoh, Masao: *See*—
Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; Kaneko, Hiroshi; and Hosoe, Yoshihisa, 4,342,842, Cl. 521-167.000.

Gough, Robert G., to Cincinnati-Milacron, Inc. Methoxy carboxylic acid esters and use as ultraviolet stabilizers. 4,342,875, Cl. 560-64.000.

Gould Inc.: *See*—
Eaton, Gerald E.; Shtarkman, Emile M.; and Snyder, Daniel S., 4,342,446, Cl. 267-35.000.

Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, to Bayer Aktiengesellschaft. Process for the production of thermoplastic synthetic materials. 4,342,847, Cl. 525-66.000.

Goyne, Thomas S. Impeller pump and seal. 4,342,537, Cl. 415-170.00A.

Gozzo, Franco: *See*—
Di Toro, Vincenzo; Gozzo, Franco; Cecere, Mirella; Lorusso, Simone; and Garavaglia, Carlo, 4,342,773, Cl. 424-272.000.

Graf, Rudolf, to Sprecher & Schuh AG. Gas-blast switch. 4,342,890, Cl. 200-148.00A.

Graff, William A.; and Thomas, George L., to General Electric Company. Glass to nickel-iron alloy seal. 4,342,553, Cl. 431-358.000.

Graham, James J.; and Earl, Edward. Bullet mold device. 4,342,141, Cl. 29-1.220.

Gram, Hans, to Brodrene Gram A/S. Vertical plate freezer. 4,342,205, Cl. 62-341.000.

Grannen, Walter A., III: *See*—
Perkins, William J.; Vest, William C.; Grannen, Walter A., III; and Meyer, Robert E., 4,342,442, Cl. 249-67.000.

Grant, Clyde P.; Look, Merton A.; and Lowe, Richard M., to Scott Paper Company. Perforate development electrode. 4,342,823, Cl. 430-103.000.

Grasselli, Robert K.: *See*—
Bartek, Joseph P.; Grasselli, Robert K.; and Cepulis, Rimvydas L., 4,342,698, Cl. 549-505.000.

Grasser, Katalin: *See*—
Berenyi nee Poldermann, Edit; Gorog, Peter; Grasser, Katalin; Kosoczky, Ibolya; Koracs nee Palotay, Agnes; and Petocz, Lujza, 4,342,766, Cl. 424-249.000.
Budai, Zoltan; Magdanyi, Laszlo; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; and Kosoczky, Ibolya, 4,342,762, Cl. 424-246.000.

Grava, Alfred. Vertical storage rack. 4,342,268, Cl. 108-55.100.

Gravenhorst, Peter; and Krenz, Johannes, to Krone GmbH; and Hagenuk. Automatic pause generator for dialers. 4,342,882, Cl. 179-90.00B.

Gray, James H., to Research Associates, Ltd. Method and apparatus for linearly conveying wheeled vehicles. 4,342,387, Cl. 198-746.000.

Gray, Leo A., to General Motors Corporation. Electromagnetic fuel injector. 4,342,427, Cl. 239-585.000.

Green Cross Corp., The: *See*—
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; Yamada, Muneo; and Watanabe, Yoshiteru, 4,342,828, Cl. 435-41.000.

Green, Tweed & Co., Inc.: *See*—
Burke, John A., 4,342,463, Cl. 277-177.000.

Greene & Kellogg, Incorporated: *See*—
McCombs, Norman R.; and Schlaechter, John, 4,342,573, Cl. 55-161.000.

Greene, Peter R.: *See*—
McMahon, Thomas A.; and Greene, Peter R., 4,342,158, Cl. 36-35.00R.

Gregg, David P.; and Keester, Kenneth L. Process for making video discs. 4,342,714, Cl. 264-81.000.

Gregorius, Klaus: *See*—
Janner, Karl; and Gregorius, Klaus, 4,342,727, Cl. 423-3.000.

Gregory, Jack T. Limited stroke force delivering tool. 4,342,216, Cl. 72-453.160.

Greiner, Max: *See*—
Straubel, Max; Greiner, Max; and Laufer, Helmut, 4,342,302, Cl. 123-502.000.

Grenell, David, to Allen-Stevens Corp. Weather-resistant arrangement for outdoor electrical devices. 4,342,493, Cl. 339-44.00M.

Greschner, Johann: *See*—
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; and Nehmiz, Peter, 4,342,817, Cl. 430-5.000.

Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., to Merck & Co., Inc. 2-(Substitutedpiperidylmethyl) propene and propane nitriles. 4,342,872, Cl. 546-186.000.

Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., to Merck & Co., Inc. 2-(Substituted piperidylmethyl) propene and propane nitriles. 4,342,873, Cl. 546-186.000.

Griffee, Leslie V.: *See*—
Anderson, Mardis V.; Griffee, Leslie V.; Grona, William H.; and Leverington, Richard D., 4,343,001, Cl. 343-745.000.

Griffith, Gerald W., to Laser Products Corporation. Battery conditioning methods and apparatus. 4,342,954, Cl. 320-14.000.

Griffith, Neil J.; Jeffers, Fredrick J.; and Calaway, Ward M., to Spin Physics, Inc. Magnetoresistive head employing field feedback. 4,343,026, Cl. 360-113.000.

Grimm, Wolfgang: *See*—
Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, 4,342,847, Cl. 525-66.000.

Grob & Co. Aktiengesellschaft: *See*—
Koch, Bernhard R., 4,342,339, Cl. 139-93.000.

Grona, William H.: *See*—
Anderson, Mardis V.; Griffee, Leslie V.; Grona, William H.; and Leverington, Richard D., 4,343,001, Cl. 343-745.000.

Gross, Glenn M., to Norlin Industries, Inc. Complex waveform generator for musical instrument. 4,342,245, Cl. 84-1.010.

Grossmann, Horst; and Bausch, Alfred, to Black & Decker Inc. Brush-shifting and trigger-switch arrangements for a portable tool. 4,342,931, Cl. 310-50.000.

Grzeika, Eugene W.; and Kozyrski, Vincent T., to Fletcher-Terry Company, The. Glazier's point driver. 4,342,414, Cl. 227-109.000.

Gschwendtner, Jorg; and Lohlein, Wolfdieter, to International Business Machines Corporation. Circuit and method for voltage level conversion. 4,342,928, Cl. 307-475.000.

GTE Laboratories Incorporated: *See*—
Regan, Robert J.; and Haugsjaa, Paul O., 4,342,967, Cl. 330-277.000.

Guanci, Anthony. Animal trap. 4,342,172, Cl. 43-61.000.

Guardian Electric Manufacturing Company: *See*—
Stone, Richard S.; and Chercasky, Morris, 4,342,973, Cl. 335-2.000.

Guild, John R., to Eastman Kodak Company. Blank and process for the formation of beam leads for IC chip bonding. 4,342,151, Cl. 29-827.000.

Guillaume, Emile A. H., to Zelacolor Systems Establishment. Apparatus for making photographic pictures. 4,342,510, Cl. 354-216.000.

Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P. Method of surfacing and apparatus for controlling same. 4,342,898, Cl. 219-76.140.

Gumm, Linley F.: *See*—
Schrock, Clifford B.; and Gumm, Linley F., 4,343,042, Cl. 455-5.000.

Guse, Rudolf, to Sack GmbH. Continuous casting installation. 4,342,358, Cl. 164-448.000.

Guthrie, Graeme J.: *See*—
McMillan, Fraser; Guthrie, Graeme J.; and Williams, David J., 4,342,647, Cl. 209-3.000.

H. J. Langen & Sons Limited: *See*—
Langen, Marinus J. M.; and Strauss, Edgar H., 4,342,808, Cl. 428-194.000.

Haasl, William D.; and Weronke, Robert B., to Brunswick Corporation. Continuity spring for a hydraulic cylinder. 4,342,634, Cl. 204-197.000.

Hagelberg, Allen C.; and Allardt, Clark E., to General Dynamics, Pomona Division. Tandem rocket launcher. 4,342,252, Cl. 89-1.812.

Hagenuk: *See—*
Gravenhorst, Peter; and Krenz, Johannes, 4,342,882, Cl. 179-90.00B.

Hagin, Faust; and Drewitz, Hans-Jurgen, to M.A.N. Maschinenfabrik Augsburg-Nuernberg AG. Articulated omnibus. 4,342,370, Cl. 180-22.000.

Hagiwara, Daijiro: *See—*
Hashimoto, Masashi; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; and Hagiwara, Daijiro, 4,342,760, Cl. 424-246.000.

Hagiwara, Shigemi: *See—*
Isobe, Minoru; Shimizu, Makoto; and Hagiwara, Shigemi, 4,342,520, Cl. 400-221.000.

Hahn, Peter A.: *See—*
Wood, Louis L.; Hartdegen, Frank J.; and Hahn, Peter A., 4,342,834, Cl. 435-182.000.

Haibel, Chester G., Jr.: *See—*
Wells, Richard B.; Haibel, Chester G., Jr.; and Hilton, Richard L., 4,343,034, Cl. 363-82.000.

Haka, Raymond J., to General Motors Corporation. Throttle positioning system. 4,342,299, Cl. 123-396.000.

Halcon SD Group, Inc., The: *See—*
Armstrong, William D.; and Winnick, Charles N., 4,342,667, Cl. 252-476.000.

Hall, Donald D., Jr.: *See—*
Halpern, Yuval; and Hall, Donald D., Jr., 4,342,682, Cl. 523-179.000.

Hall, Stephen M.: *See—*
Brown, David E.; Hall, Stephen M.; and Mahmood, Mahmood N., 4,342,792, Cl. 427-34.000.

Haller, George S.: *See—*
Fowler, J. Alan; Haller, George S.; and Rogers, C. David, 4,342,487, Cl. 308-3.900.

Hallett, Peter: *See—*
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Bradshaw, John; and Hayes, Norman F., 4,342,756, Cl. 424-244.000.

Halpern, Yuval; and Hall, Donald D., Jr., to Borg-Warner Chemicals, Inc. Intumescent flame retardant thermoplastic polyurethane elastomer compositions. 4,342,682, Cl. 523-179.000.

Halstrick, Robert T. Fastenings for storage racks. 4,342,397, Cl. 211-191.000.

Halverson, Frederick, to American Cyanamid Company. Process for the flocculation of suspended solids. 4,342,653, Cl. 210-734.000.

Hamil, Robert L.: *See—*
Kastner, Ralph E.; and Hamil, Robert L., 4,342,829, Cl. 435-118.000.

Hammar, Richard H.: *See—*
Clague, Robert E.; Hammar, Richard H.; and Harvey, Douglas J., 4,342,343, Cl. 141-1.100.

Hammers, P. Fred: *See—*
Wilson, James G., II; and Hammers, P. Fred, 4,342,878, Cl. 373-94.000.

Han, Ching C.; Bilenko, Herman W.; and Hwang, Yeongming, to Ford Aerospace & Communications Corporation. Microwave antenna system having enhanced band width and reduced cross-polarization. 4,343,005, Cl. 343-781.00P.

Hance, Max H.: *See—*
Teague, Edward W.; Hance, Max H.; and Neal, Carl R., 4,342,565, Cl. 8-532.000.

Hane, Dale R. Reciprocal method and apparatus for transferring vehicle batteries. 4,342,533, Cl. 414-396.000.

Hanson, Dale M., to Wide One Corporation. Method for widening an automotive vehicle. 4,342,146, Cl. 29-416.000.

Hanson, Rodger D.: *See—*
Erickson, Ernest A.; Hanson, Rodger D.; and Mews, Lance D., 4,342,373, Cl. 181-266.000.

Hara, Kunio; and Kimura, Shigeru, to Nifco Inc. Housing unit for liquid gauge and strainer. 4,342,224, Cl. 73-290.00R.

Harada, Takao; Ohashi, Hideaki; Koike, Wataro; Yazawa, Chihiro; and Nanjo, Kazuko, to Ihara Chemical Industry Co., Ltd. Bis(aminophenylthioalkyl)terephthalate and hardener for polyurethane elastomer thereof. 4,342,859, Cl. 528-64.000.

Haraguchi, Keisuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Mirror operating mechanism in single-lens reflex camera. 4,342,508, Cl. 354-152.000.

Harbridge, John B., to Beecham Group Limited. Clavulanic acid derivatives a process for their preparation and their use in pharmaceutical compositions. 4,342,749, Cl. 424-114.000.

Hardy, Donald, Sr., to FMC Corporation. Enhancement of trilithium phosphate catalyst activity. 4,342,666, Cl. 252-437.000.

Harris Data Communications, Inc.: *See—*
Traster, Elden D., 4,342,990, Cl. 340-724.000.

Hartdegen, Frank J.: *See—*
Wood, Louis L.; Hartdegen, Frank J.; and Hahn, Peter A., 4,342,834, Cl. 435-182.000.

Harte, Kenneth J.; and Dougherty, Edward C., to Control Data Corporation. Charged particle beam structure having electrostatic coarse and fine double deflection system with dynamic focus and diverging beam. 4,342,949, Cl. 315-409.000.

Harvey, Christian D. Continuous anaerobic digestor system. 4,342,836, Cl. 435-316.000.

Harvey, Douglas J.: *See—*
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Hofer, Wolfgang. Hanging implement for garment bags. 4,342,479, Cl. 294-142.000.
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Hogue, Guy L.; and Mason, James D., to Hogue Combat Grips, Inc. Fastener for unitary pistol hand grip. 4,342,170, Cl. 42-71.00P.
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Howard, Richard E.; and Jackel, Lawrence D., to Bell Telephone Laboratories, Incorporated. Nonhysteretic Josephson junction circuits with feedback. 4,342,924, Cl. 307-245.000.
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Hussmann, Peter, to Mittex AG. Method and apparatus for abstracting water from air. 4,342,569, Cl. 55-33.000.
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Idel, Karsten; Cohnen, Wolfgang; and Freitag, Dieter, to Bayer Aktiengesellschaft. Use of organic silicon compounds in combination with oxetane compounds, dioxanes or tetrahydrofuranes for stabilizing and brightening polycarbonates which are free from phosphites and free from boric acid esters. 4,342,681, Cl. 524-108.000.
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International Standard Electric Corporation: *See*—
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Ishikawa, Youhei: *See*—
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Isobe, Minoru; Shimizu, Makoto; and Hagiwara, Shigemi, to Oki Electric Industry Co., Ltd. Inkribbon feed mechanism. 4,342,520, Cl. 400-221.000.
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Ebner, Peter R., 4,342,504, Cl. 354-7.000.
Ito, Kichizo: *See*—
Usuki, Takayoshi; Endo, Yukio; Ito, Kichizo; Tuboi, Takao; and Kubota, Shin, 4,342,814, Cl. 428-383.000.
Itoh, Hiroyuki; and Imai, Hirosuke, to Nippon Oil Company, Ltd. Aqueous gel compositions. 4,342,665, Cl. 252-316.000.
Ivanchev, Sergei S.; Pavljuchenko, Valery N.; Pessina, Zinaida M.; and Vasilieva, Elena D. Method for producing latices of copolymers of butyl acrylate and 1-methacrylate-1-tert-butyl peroxy ethane. 4,342,676, Cl. 524-458.000.
Ivanov, Sergeia A.: *See*—
Glebov, Igor A.; Danilevich, Yanush B.; Ivanov, Sergeia A.; Karymov, Anatoly A.; Kotlyarova, Galina A.; Sapozhnikov, Vladimir A.; and Shakhtarin, Valentin N., 4,342,932, Cl. 310-52.000.
Iwashita, Hidemaro; and Hayashi, Kenichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process of producing a potassium sulfate salt. 4,342,737, Cl. 423-522.000.
Iwata, Tadao: *See*—
Takeda, Nobuyuki; and Iwata, Tadao, 4,342,852, Cl. 525-481.000.
Izod, Thomas P. J.: *See*—
Abrahams, Louis; and Izod, Thomas P. J., 4,342,679, Cl. 524-401.000.
Jackel, Lawrence D.: *See*—
Howard, Richard E.; and Jackel, Lawrence D., 4,342,924, Cl. 307-245.000.
Jackson, Isaac S., to Mallinckrodt, Inc. Suction catheters with improved suction control valve. 4,342,315, Cl. 128-349.00R.
Jackson, Winston J., Jr.; and Darnell, William R., to Eastman Kodak Company. Polyesters of trans-1,4-cyclohexanedicarboxylic acid and 2-phenylhydroquinone and modifications thereof. 4,342,862, Cl. 528-176.000.
Jacobs, Erwin; Schwabe, Ulrich; and Takacs, Dezso, to Siemens Aktiengesellschaft. Method of making very short channel length MNOS and MOS devices by double implantation of one conductivity type subsequent to other type implantation. 4,342,149, Cl. 29-576.00B.

Jaecklin, Andre, to BBC Brown, Boveri & Company, Limited. Light-ignitable thyristor with anode-base duct portion extending on cathode surface between thyristor portions. 4,343,014, Cl. 357-38.000.

Jaffe, Fred, to Stauffer Chemical Company. Process for producing diethyl phosphite. 4,342,709, Cl. 260-978.000.

Jakobi, Wilhelm; Heinrichs, Bernhard; and Jokisch, Friedrich, to Krupp-Koppers GmbH. Cooling device for coke dry cooling. 4,342,626, Cl. 202-228.000.

James, Ian W. Animal treatment tunnels or races. 4,342,285, Cl. 119-155.000.

Jamison, Warren E.; and Pennington, Raymond C., to Projected Lubricants, Inc. Self-lubricating journal bearing. 4,342,491, Cl. 308-239.000.

Jandera, Jan; and Studnicka, Jan, to Ceske plunarenske pdniky, koncern. Device for the internal inspection of pipelines. 4,342,225, Cl. 73-432.00R.

Janner, Karl; and Gregorius, Klaus, to Kraftwerk Union Aktiengesellschaft. Method for the separation of gaseous isotope compounds. 4,342,727, Cl. 423-3.000.

Jannotta, Louis J. Two disc encoder system for monitoring height of liquid in storage tank. 4,342,996, Cl. 340-870.160.

Janssen Pharmaceutica N.V.: *See—*
Kennis, Ludo E. J.; and Mertens, Josephus C., 4,342,870, Cl. 544-282.000.

Jarvis, Stephen A.: *See—*
Kirkpatrick, Robert G.; and Jarvis, Stephen A., 4,342,253, Cl. 89-12.000.

Jastram-Werke GmbH KG: *See—*
Brix, Joachim; and Weiss, Friedrich, 4,342,275, Cl. 114-162.000.

Jatteau, Michel; Chalmeton, Vincent; and Pauvert, Joseph, to U.S. Philips Corporation. Method of and apparatus for tomographic examination of structures by X-ray or gamma ray scanning. 4,342,916, Cl. 378-4.000.

Jeffers, Fredrick J.: *See—*
Griffith, Neil J.; Jeffers, Fredrick J.; and Calaway, Ward M., 4,343,026, Cl. 360-113.000.

Jennings, Thomas A. Method of making multiple electrical components in integrated microminiature form. 4,342,143, Cl. 29-25.420.

Jet Accessories, Inc.: *See—*
Phillips, Ernest L., 4,342,979, Cl. 337-41.000.

Jevne, Allan: *See—*
Skinner, Earl; Emeott, Marvin; and Jevne, Allan, 4,342,793, Cl. 427-44.000.

Joh, Yasushi; Yamazaki, Masahiro; Kaneko, Noriaki; Oikawa, Shigehiko; Makuta, Yoshihiro; and Hayashi, Chizuko, to Nippon Zeon Co., Ltd. Method of manufacturing hollow fiber. 4,342,711, Cl. 264-41.000.

John Wyeth & Brother Limited: *See—*
Ward, Terence J., 4,342,761, Cl. 424-246.000.

Johnson, Bruce K.; and Black, Kenneth P., to Polaroid Corporation. Exposure trim mechanism for cameras. 4,342,506, Cl. 354-27.000.

Johnson, Bruce K.; and Morse, John B., to Polaroid Corporation. Flash holder assembly arrangement. 4,342,507, Cl. 354-143.000.

Johnson, Byron W.: *See—*
House, Ronnalee; and Johnson, Byron W., 4,342,292, Cl. 123-146.50A.

Johnson, Mark; and Ulrich, Reinhard, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Method and arrangement for the measurement of rotations by the Sagnac effect. 4,342,517, Cl. 356-350.000.

Johnson, Matthey & Co., Limited: *See—*
Notton, John H. F., 4,342,606, Cl. 148-23.000.

Johnson, Michael R.; Schaaf, Thomas K.; and Hess, Hans-Jurgen E., to Pfizer Inc. 2-Descarboxy-2-(tetrazol-5-yl)-16,16-dimethyl-17-(2-furyl)-ω-trisnorprostaglandin E_2. 4,342,868, Cl. 542-431.000.

Johnson, William M.; Lindsay, Alan; and Klaassens, Harry, to Ralph McKay Limited. Tool fastening. 4,342,166, Cl. 37-142.00A.

Jokisch, Friedrich: *See—*
Jakobi, Wilhelm; Heinrichs, Bernhard; and Jokisch, Friedrich, 4,342,626, Cl. 202-228.000.

Jones, Daniel K.: *See—*
Cox, Joseph A.; and Jones, Daniel K., 4,342,531, Cl. 414-46.000.

Jones, Derrick F.; and Oldham, Keith, to Imperial Chemical Industries Limited. Guanidine derivatives and pharmaceutical compositions containing them. 4,342,765, Cl. 424-249.000.

Jones, John E.: *See—*
Paddock, Gordon R.; and Jones, John E., 4,342,194, Cl. 60-290.000.

Joy Manufacturing Company: *See—*
O'Neill, Michael L., 4,342,486, Cl. 299-86.000.

Jung, Michel: *See—*
Bey, Philippe; and Jung, Michel, 4,342,780, Cl. 424-319.000.

Jungles, Donald S., to Dymar Industries, Inc. Refuse container cover. 4,342,402, Cl. 220-343.000.

Jurd, Leonard, to United States of America, Agriculture. Polybutylbenzylphenols and benzyl-3,4-methylenedioxybenzenes in insect population control. 4,342,777, Cl. 424-282.000.

Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
Mohring, Gunter, 4,343,003, Cl. 343-781.00P.
Ziemek, Gerhard; Klebl, Wolfram; Hoffmann, Ernst; and Brunn, Reiner, 4,342,190, Cl. 57-293.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Mizuno, Tadatoshi; Hosotani, Sumihiro; and Nishihara, Kaoru, 4,342,333, Cl. 137-625.440.

Kabushiki Kaisha Meidensha: *See—*
Kai, Takaaki, 4,343,027, Cl. 361-42.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Katoh, Takashi; and Yoshizawa, Toshio, 4,342,429, Cl. 242-18.0DD.

Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo: *See—*
Ueno, Ryuzo; Matsuda, Toshio; Inamine, Shigeo; Kanayama, Tatsuo; and Fujita, Yatsuka, 4,342,789, Cl. 426-266.000.

Kadin, Saul B., to Pfizer Inc. Diphenylpropenamides as SRS-A antagonists. 4,342,781, Cl. 424-319.000.

Kafka, Donald C.: *See—*
Lane, Rick; Kafka, Donald C.; and Kafka, Jayne M., 4,342,458, Cl. 273-248.000.

Kafka, Jayne M.: *See—*
Lane, Rick; Kafka, Donald C.; and Kafka, Jayne M., 4,342,458, Cl. 273-248.000.

Kagan, Veniamin G.: *See—*
Ishkin, Vyacheslav K.; and Kagan, Veniamin G., 4,342,923, Cl. 307-147.000.

Kai, Takaaki, to Kabushiki Kaisha Meidensha. Common suspension multi-line grounding protective relay. 4,343,027, Cl. 361-42.000.

Kakimi, Fujio; Hiratsuka, Nobuo; and Matsukawa, Hiroharu, to Fuji Photo Film Co., Ltd. Novel material for immunological assay of biochemical components and a process for the determination of said components. 4,342,739, Cl. 424-1.000.

Kallmeyer, Michael; Rosch, Hans; Scheuing, Claus; and Solf, Bernhard, to Discovision Associates. Binary piezoelectric drive for lens focusing system. 4,342,935, Cl. 310-328.000.

Kaminski, Tony L.: *See—*
Stikeleather, Larry F.; and Kaminski, Tony L., 4,342,186, Cl. 56-257.000.

Kanayama, Tatsuo: *See—*
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Kanbe, Junichiro: *See—*
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Kanebo Ltd.: *See—*
Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, 4,342,693, Cl. 549-229.000.

Kaneko, Hiroshi: *See—*
Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; Kaneko, Hiroshi; and Hosoe, Yoshihisa, 4,342,842, Cl. 521-167.000.

Kaneko, Noriaki: *See—*
Joh, Yasushi; Yamazaki, Masahiro; Kaneko, Noriaki; Oikawa, Shigehiko; Makuta, Yoshihiro; and Hayashi, Chizuko, 4,342,711, Cl. 264-41.000.

Kang, Kenneth S.; and Veeder, George T., to Merck & Co., Inc. Heteropolysaccharide S-130. 4,342,866, Cl. 536-119.000.

Kanno, Hidenori: *See—*
Ban, Itsuki; and Kanno, Hidenori, 4,342,884, Cl. 200-34.000.

Kanou, Noboru; and Mori, Keiji, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Removable roof equipped with a wind deflector plate. 4,342,481, Cl. 296-217.000.

Kanyo, Erzsebet: *See—*
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,342,871, Cl. 546-65.000.

Kapura, Edward M.; and Goode, Henry C., to PPG Industries, Inc. Apparatus and method for attenuating floating glass ribbon. 4,342,583, Cl. 65-99.500.

Karady, Sandor: *See—*
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,757, Cl. 424-246.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,869, Cl. 544-21.000.

Karamian, Narbik A. Apparatus for preventing bacterial passage into sterile fluid systems. 4,342,915, Cl. 250-436.000.

Karius, Dietmar: *See—*
Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, 4,342,262, Cl. 102-489.000.

Karnis, Alkibiadis; and Shallhorn, Paul M. Method and apparatus on-line monitoring of fibre length of mechanical pumps. 4,342,618, Cl. 162-49.000.

Karnovsky, Manfred L.: *See—*
Pappenheimer, John R.; Krueger, James M.; and Karnovsky, Manfred L., 4,342,748, Cl. 424-95.000.

Karnowski, Gary A.; and Sriramamurty, Durvasula V., to Globe-Union Inc. Storage battery electrolyte temperature measuring apparatus. 4,342,963, Cl. 324-431.000.

Karymov, Anatoly A.: *See—*
Glebov, Igor A.; Danilevich, Yanush B.; Ivanov, Sergeia A.; Karymov, Anatoly A.; Kotlyarova, Galina A.; Sapozhnikov, Vladimir A.; and Shakhtarin, Valentin N., 4,342,932, Cl. 310-52.000.

Kasai, Sin; Kawaguchi, Yutaka; and Satoh, Michio, to Nitto Boseki Co., Ltd. Method of shifting strands before termination of winding of glass fiber. 4,342,430, Cl. 242-18.00A.

Kasai, Syozo: *See—*
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.

Kashima, Isoo; Takase, Yosio; and Mishina, Masami, to Matsushita Electric Works, Ltd. Limit switch. 4,342,885, Cl. 200-47.000.

Kaspar, Arthur H. Article actuated coin dispensing machine. 4,342,385, Cl. 194-4.00D.

Kastner, Ralph E.; and Hamil, Robert L., to Eli Lilly and Company. Process for preparing narasin. 4,342,829, Cl. 435-118.000.

Katayama, Yoshihiko: *See—*
Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; and Tsuyama, Shigeo, 4,342,708, Cl. 260-665.00R.
Kato, Toshio: *See—*
Sakai, Katsuya; Mita, Ryuichi; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, 4,342,700, Cl. 260-370.000.
Katoh, Naboru; Komatsu, Kazumiya; and Nozaki, Hisashi, to Kibun Company Limited. Method of producing minced fish meat. 4,342,790, Cl. 426-332.000.
Katoh, Takashi; and Yoshizawa, Toshio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Bobbin holder. 4,342,429, Cl. 242-18.0DD.
Katopodis, Nonda; and Stock, C. Chester, to Sloan Kettering Institute for Cancer Research. Sialic acid determination method. 4,342,567, Cl. 23-230.00B.
Kautex-Maschinebau GmbH: *See—*
Schwochert, Hans-Joachim, 4,342,799, Cl. 428-35.000.
Kautt & Bux KG: *See—*
Gerlach, Heinz; and Woerner, Lothar, 4,342,933, Cl. 310-234.000.
Kawabe, Norio: *See—*
Kinashi, Takao; Fujita, Takashi; and Kawabe, Norio, 4,342,820, Cl. 430-11.000.
Kawada, Mitsuru: *See—*
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Kawaguchi, Kiyokazu: *See—*
Sugio, Akitoshi; Amemiya, Akira; Kimura, Masaharu; Otuki, Yoshiharu; and Kawaguchi, Kiyokazu, 4,342,680, Cl. 524-100.000.
Kawaguchi, Yutaka: *See—*
Kasai, Sin; Kawaguchi, Yutaka; and Satoh, Michio, 4,342,430, Cl. 242-18.00A.
Kawahara, Atsushi: *See—*
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Kawai Musical Instrument Mfg. Co., Ltd.: *See—*
Deutsch, Ralph; and Deutsch, Leslie J., 4,342,248, Cl. 84-1.240.
Kawai, Tsutomu. Device for detecting tape end of magnetic recording apparatus. 4,343,024, Cl. 360-74.600.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Ishii, Hiroshi, 4,342,201, Cl. 62-238.400.
Susei, Shuzo; Matsui, Shigetomo; and Nagai, Hiroyoshi, 4,342,900, Cl. 219-121.0EN.
Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, 4,342,918, Cl. 422-186.040.
Keating, Stephen J., Jr., to Combustion Engineering, Inc. Molten core catcher and containment heat removal system. 4,342,621, Cl. 376-298.000.
Keester, Kenneth L.: *See—*
Gregg, David P.; and Keester, Kenneth L., 4,342,714, Cl. 264-81.000.
Keithahn, Julian D.: *See—*
Wieveg, Raymond; and Keithahn, Julian D., 4,342,330, Cl. 137-315.000.
Keller, Merten: *See—*
Lorenz, Otto; and Keller, Merten, 4,342,412, Cl. 226-21.000.
Kellert, Paul H.: *See—*
Gibson, Adler E.; and Kellert, Paul H., 4,342,180, Cl. 52-741.000.
Kellogg, George W.: *See—*
Benton, Charles M.; Arnold, Franklin D.; Kellogg, George W.; and Kirk, Roger D., 4,342,178, Cl. 52-125.500.
Kellogg, Michael S., to Pfizer Inc. Bis-esters of 1,1-alkanediols with 6-beta-hydroxymethylpenicillanic acid 1,1-dioxide and beta-lactam antibiotics. 4,342,768, Cl. 424-250.000.
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Rosenberg, Philip, 4,342,316, Cl. 128-349.00B.
Kennametal Inc.: *See—*
Denman, Dennis, 4,342,368, Cl. 175-410.000.
Kennecott Corporation: *See—*
Davidson, Donald H.; and Huff, Ray V., 4,342,484, Cl. 299-5.000.
Kennedy, Joseph P., to University of Akron, The. Novel telechelic polymers and processes for the preparation thereof. 4,342,849, Cl. 525-333.700.
Kennis, Ludo E. J.; and Mertens, Josephus C., to Janssen Pharmaceutica N.V. Novel 3-(1-piperidinylalkyl)-4H-pyrido[1,2-a]pyrimidin-4-one derivatives. 4,342,870, Cl. 544-282.000.
Kerber, Helmut: *See—*
Rosemeier, Friedrich; and Kerber, Helmut, 4,342,420, Cl. 233-28.000.
Kester, William W. Cart for vehicle with single rear wheel. 4,342,467, Cl. 280-204.000.
Kestner, Mark O.: *See—*
Kober, Alfred E.; and Kestner, Mark O., 4,342,797, Cl. 427-220.000.
Ketchpel, Richard D., to Rockwell International Corporation. Electroluminescent thin film device. 4,342,945, Cl. 313-505.000.
Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft: *See—*
Gaiser, Ruprecht; and Stolzer, Paul, 4,342,240, Cl. 83-42.000.
Key, Worth M.; and Herkness, Wayne, to Burlington Industries, Inc. Air jet loom filling feeding. 4,342,340, Cl. 139-435.000.
Keystone Consolidated Industries, Inc.: *See—*
Badtke, Deane L.; and Lehman, Robert V., 4,342,403, Cl. 220-345.000.
Khusandzhanov, Aman I.: *See—*
Alekhin, Stanislav A.; Bakhir, Vitold M.; Born, Raisa I.; Bakhir, Tatyana M.; and Khusandzhanov, Aman I., 4,342,222, Cl. 73-153.000.
Kibun Company Limited: *See—*
Katoh, Naboru; Komatsu, Kazumiya; and Nozaki, Hisashi, 4,342,790, Cl. 426-332.000.
Kieffer, Richard: *See—*
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Kiekert GmbH & Co. Kommanditgesellschaft: *See—*
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Kikkoman Corporation: *See—*
Motomura, Yoshie; Ishiyama, Jiro; and Shimizu, Junichi, 4,342,585, Cl. 71-86.000.
Kimura, Akio: *See—*
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Kimura, Masaharu: *See—*
Sugio, Akitoshi; Amemiya, Akira; Kimura, Masaharu; Otuki, Yoshiharu; and Kawaguchi, Kiyokazu, 4,342,680, Cl. 524-100.000.
Kimura, Sakae; Shimura, Masahiro; and Okai, Tadatake, to Tokyo Shibaura Denki Kabushiki Kaisha. Getter device. 4,342,662, Cl. 252-181.400.
Kimura, Shigeru: *See—*
Hara, Kunio; and Kimura, Shigeru, 4,342,224, Cl. 73-290.00R.
Kinashi, Takao; Fujita, Takashi; and Kawabe, Norio, to Toray Industries, Inc. Dry planographic printing plate and preparation thereof. 4,342,820, Cl. 430-11.000.
Kirakosian, Robert T.: *See—*
Melikian, Zograb A.; Oganian, Larisa G.; Simonian, Arsen S.; and Kirakosian, Robert T., 4,342,204, Cl. 62-304.000.
Kirchherr, Patricia R.: *See—*
Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., 4,342,802, Cl. 428-92.000.
Kirk, Roger D.: *See—*
Benton, Charles M.; Arnold, Franklin D.; Kellogg, George W.; and Kirk, Roger D., 4,342,178, Cl. 52-125.500.
Kirkpatrick, Robert G.; and Jarvis, Stephen A., to General Electric Company. Sprocket arrangement in a high rate of fire revolving battery gun. 4,342,253, Cl. 89-12.000.
Kisfaludy, Lajos: *See—*
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,342,755, Cl. 424-244.000.
Klaassens, Harry: *See—*
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Klane Corporation, The: *See—*
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Kleber, Rolf: *See—*
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Klebl, Wolfram: *See—*
Ziemek, Gerhard; Klebl, Wolfram; Hoffmann, Ernst; and Brunn, Reiner, 4,342,190, Cl. 57-293.000.
Kleefeldt, Frank, to Kiekert GmbH & Co. Kommanditgesellschaft. Central vehicle door-lock system. 4,342,209, Cl. 70-264.000.
Kleemann, Axel; and Samson, Marc, to Degussa Aktiengesellschaft. 2-[2'-(Hydanto-5-yl)-ethyl]-5,5-dimethyl-1,3-dioxane. 4,342,874, Cl. 548-309.000.
Klingman, Gilbert E., to Bechtel International Corporation. Method for oxidation of p-xylene and method for preparing dimethylterephthalate. 4,342,876, Cl. 560-77.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Komp, Hermann-Josef, 4,342,289, Cl. 123-41.700.
Knapp, Robert F., to International Business Machines Corporation. Printer control circuit. 4,343,012, Cl. 346-139.00R.
Knutson, Russell R. Beverage cooling apparatus for connection to auto air conditioner. 4,342,202, Cl. 62-243.000.
Kobayashi, Masayoshi: *See—*
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Kobayashi, Shunji: *See—*
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Kobe Steel, Limited: *See—*
Murai, Ryuji; Watanabe, Toshihiko; Ogata, Yoji; Nagashima, Masashi; and Soga, Mitsurou, 4,342,897, Cl. 219-73.200.
Kober, Alfred E.; and Kestner, Mark O., to Apollo Technologies, Inc. Wet flow characteristic of coal and other water-insoluble solid particles. 4,342,797, Cl. 427-220.000.
Koch, Bernhard R., to Grob & Co. Aktiengesellschaft. Weaving heddle. 4,342,339, Cl. 139-93.000.
Koch, Robert L., II, to George Koch Sons, Inc. Plywood layup line. 4,342,615, Cl. 156-563.000.
Kocher, Timothy L.: *See—*
Bennett, Benny M.; Kocher, Timothy L.; and Little, David M., 4,342,495, Cl. 339-163.000.
Kocher, Willi: *See—*
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Kockums Industri AB: *See—*
Eklund, Urban, 4,342,241, Cl. 83-56.000.
Koehring Company: *See—*
Reinicker, Donald C.; and Radcliffe, Daniel J., 4,342,335, Cl. 137-636.200.
Salani, Chittaranjan, 4,342,523, Cl. 404-117.000.
Kogan, Naum P. Method and apparatus for manufacturing cement clinker. 4,342,598, Cl. 106-100.000.
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, to Fujitsu Fanuc Limited. Spindle rotation control system. 4,342,950, Cl. 318-611.000.

Koike, Wataro: *See*—
Harada, Takao; Ohashi, Hideaki; Koike, Wataro; Yazawa, Chihiro; and Nanjo, Kazuko, 4,342,859, Cl. 528-64.000.
Komatsu, Kazumiya: *See*—
Katoh, Naboru; Komatsu, Kazumiya; and Nozaki, Hisashi, 4,342,790, Cl. 426-332.000.
Komp, Hermann-Josef, to Klockner-Humboldt-Deutz Aktiengesellschaft. Internal combustion engine, especially air-cooled internal combustion engine for vehicles and driving units. 4,342,289, Cl. 123-41.700.
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, to FMC Corporation. Processes for producing pyrethroid insecticide intermediates. 4,342,694, Cl. 549-273.000.
Koonce, George R.: *See*—
Pfeifer, George F.; Koonce, George R.; and Phillips, Jack E., 4,342,910, Cl. 250-237.00G.
Koop, Hermann: *See*—
Becker, Joahann; Koop, Hermann; and Schueddekopf, Hans, 4,342,635, Cl. 204-263.000.
Koracs nee Palotay, Agnes: *See*—
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Fetzer, Wolfgang, 4,342,574, Cl. 55-341.00M.
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Krueger, James M.: *See*—
Pappenheimer, John R.; Krueger, James M.; and Karnovsky, Manfred L., 4,342,748, Cl. 424-95.000.
Krupp-Koppers GmbH: *See*—
Jakobi, Wilhelm; Heinrichs, Bernhard; and Jokisch, Friedrich, 4,342,626, Cl. 202-228.000.
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Yamashita, Keitaro; and Kumakura, Toshio, 4,342,282, Cl. 118-657.000.
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Kuroda, Masahiro, to Bridgestone Tire Co., Ltd. Pneumatic tire for high speed under heavy load. 4,342,351, Cl. 152-209.00R.
Kutsch, Howard J., to Du Pont de Nemours, E. I., and Company. Composite elastomeric spring belt. 4,342,806, Cl. 428-174.000.
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Kwon, Joon T., to Lummus Company, The. Production of alkyl hypohalites. 4,342,703, Cl. 260-453.0RX.
Kyan, Chwan P., to Chevron Research Company. Shaped channeled catalyst. 4,342,643, Cl. 208-134.000.
Lacell, Albert: *See*—
McLennan, Lloyd K.; and Lacell, Albert, 4,343,043, Cl. 455-231.000.
Lacey, Robert L., to Illinois Tool Works Inc. Resilient fastener having keeper with lock. 4,342,140, Cl. 24-373.000.
Lagakos, Nicholas: *See*—
Macedo, Pedro B.; Litovitz, Theodore A.; Lagakos, Nicholas; Mohr, Robert K.; and Meister, Robert, 4,342,907, Cl. 250-227.000.
Lagoni, William A., to RCA Corporation. Apparatus for reducing the effect of co-channel interference on synchronizing pulses. 4,343,019, Cl. 358-31.000.
Lalikos, James M.; Waite, Harold K.; and Lefebvre, Kenneth E., to Titeflex Corporation. Method of making a preformed semirigid plastic hose wrapped with a wire spiral. 4,342,612, Cl. 156-143.000.
Lamb, Frank E., to Duval Corporation. Non-polluting process for recovery of precious metal values from ores including those containing carbonate materials. 4,342,592, Cl. 75-118.00R.
Lambert, Jean-Luc, to Fives-Cail Babcock. Pulsation amplitude control for pneumatically pulsated liquid. 4,342,654, Cl. 210-744.000.
Lane, Rick; Kafka, Donald C.; and Kafka, Jayne M. Multi-player backgammon. 4,342,458, Cl. 273-248.000.
Lange, Karl-Heinz, to Fico Fischer & Co. Method for the production of ornamental link chains (Venetian chains) ready for soldering. 4,342,191, Cl. 59-35.00R.
Langen, Marinus J. M.; and Strauss, Edgar H., to H. J. Langen & Sons Limited. Roll stock for use in manufacture of bag. 4,342,808, Cl. 428-194.000.
Lanier Business Products Co., Inc.: *See*—
Smith, Jack E., Jr.; and Mason, Paul C., 4,343,039, Cl. 369-28.000.
Lapp, Ellsworth W. Three-position, four-way rotary valve. 4,342,332, Cl. 137-625.230.
Larkfeldt, Owe C. G., to AB Skanska Cementgjuteriet. Process and device for production of concrete pipe by filling and compaction of fresh concrete in an upright form. 4,342,713, Cl. 264-71.000.
Larson, Hugo R.; Avery, Howard S.; and Chapin, Henry J., to Abex Corporation. Castings. 4,342,593, Cl. 75-128.00A.
Laser Products Corporation: *See*—
Griffith, Gerald W., 4,342,954, Cl. 320-14.000.
Lattes, Ana L.: *See*—
Melngailis, John; Haus, Hermann A.; and Lattes, Ana L., 4,342,970, Cl. 333-142.000.
Lauckner, Joachim: *See*—
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Lauer, Hansjorg: *See*—
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Lausman, Thomas C.: *See*—
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Lay nee Konya, Aranka: *See*—
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Ledvina, Timothy J.; and Mead, Robert H., to Borg-Warner Corporation. Composite chain link assembly. 4,342,560, Cl. 474-157.000.
Lee, Gerry A., to Beatrice Foods Co. Dispenser flow proportioning device. 4,342,406, Cl. 222-442.000.
Lee, James K.: *See*—
Marcus, Michael A.; and Lee, James K., 4,342,936, Cl. 310-330.000.
Lee, John C. Cooking grill. 4,342,259, Cl. 99-425.000.
Lee, Peter F., to Southland Instruments, Inc. Blood transfer device. 4,342,341, Cl. 141-1.000.
Lee, Raymond: *See*—
Cripps, Michael W.; and Lee, Raymond, 4,342,171, Cl. 43-53.500.

Lefebvre, Kenneth E.: *See*—
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Lefebvre, Philip H.: *See*—
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Legrand, Pierre, to Applied Power Inc. Measuring bridge. 4,342,154, Cl. 33-180.0AT.
Lehmacher, Hans. Apparatus for the stacking and connection of synthetic-resin foil bags. 4,342,564, Cl. 493-195.000.
Lehman, Robert V.: *See*—
Badtke, Deane L.; and Lehman, Robert V., 4,342,403, Cl. 220-345.000.
Leivenzon, Simon; and Leivenzon, Steven, to Firmaframe Nominees Pty. Ltd. Mechanism for stopping the drive or reversing the drive of motors of roller shutter doors. 4,342,354, Cl. 160-133.000.
Leivenzon, Steven: *See*—
Leivenzon, Simon; and Leivenzon, Steven, 4,342,354, Cl. 160-133.000.
Lemelson, Jerome H. Apparatus for coding articles. 4,342,549, Cl. 425-150.000.
Lenz, Herman N.; and Host, David A., to Teledyne Industries, Inc. Bearing lubricating injector. 4,342,489, Cl. 308-187.000.
Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab): *See*—
Godtfredsen, Wagn O.; and von Daehne, Welf, 4,342,772, Cl. 424-271.000.
Les Services TMG Inc.: *See*—
Biss, Rudy; and Nadeau, Raymond, 4,342,648, Cl. 209-166.000.
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Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P., 4,342,898, Cl. 219-76.140.
Leskinen, Seppo J., to Oy Nokia AB. Impeller assembly for a centrifugal blower. 4,342,541, Cl. 416-186.00R.
Lesoille, Marcel, to Mines et Produits Chimiques de Salsigne. Process for the recovery of gold and/or silver and possibly bismuth contained in sulfuretted ores and/or sulfoarsenides. 4,342,591, Cl. 75-101.00R.
Lever Brothers Company: *See*—
Arai, Masaaki; Ohba, Masami; Ricketts, Guy A. G.; and Steer, Jean A., 4,342,744, Cl. 424-70.000.
Leverington, Richard D.: *See*—
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Levine, Alan H.: *See*—
Abraham, Carl J.; and Newman, Malcolm, 4,342,122, Cl. 2-424.000.
Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal pyridinsulfonamides. 4,342,587, Cl. 71-92.000.
Lewis, Robert T., to Chevron Research Company. Magnetic separation of mineral particles from shale oil. 4,342,640, Cl. 208-11.00R.
Lewis, William C. Expandable piston motor. 4,342,291, Cl. 123-78.00B.
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Goldkuhle, Gerhard, 4,343,016, Cl. 358-1.000.
Lichtenwalter, Robert H.; and Pierson, Darrell E., to Weyerhaeuser Company. Veneer lathe chuck assembly. 4,342,348, Cl. 144-209.00R.
Lichtman, Philip R., to Pandiscio, Nicholas A., a part interest. Manually cycled pistol. 4,342,169, Cl. 42-11.000.
Liebegott, Klaus, to Bayerische Motoren Werke Aktiengesellschaft. Headlight adjusting device for vehicles. 4,343,031, Cl. 362-80.000.
Lindmayer, Istvan; and Menassa, Karim. Hydro-pneumatic jet injector. 4,342,310, Cl. 128-207.250.
Lindroth, Thomas A.; and Winston, Philip E., Jr., to Merck & Co., Inc. Use of Heteropolysaccharide S-156 in latex paint. 4,342,672, Cl. 524-29.000.
Lindsay, Alan: *See*—
Johnson, William M.; Lindsay, Alan; and Klaassens, Harry, 4,342,166, Cl. 37-142.00A.
Lindsay, Joseph. Rotating shaft seal assembly. 4,342,461, Cl. 277-30.000.
Liotet, Serge; and Assier, Pierre-Jean. Colostrum-based composition for external use. 4,342,747, Cl. 424-95.000.
Lipman, Daniel. Apparatus and method for grooving a board-like material, a grooving tool therefor and a structure made by the method. 4,342,349, Cl. 144-371.000.
Litovitz, Theodore A.: *See*—
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Liu, Sheau-Ming S.: *See*—
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Llera, Santos A. A., to Precision Plastic Products Corp. Tamper indicating closure and pressurized container. 4,342,400, Cl. 215-256.000.
Lo, Ching P. Motorcycle exhaust system. 4,342,195, Cl. 60-313.000.
Locatelli, Jean-Louis; and Robin, Jean, to Rhone-Poulenc Industries. Polyisocyanato/imido compositions and imide group containing polymers prepared therefrom. 4,342,860, Cl. 528-59.000.
Locatelli, Jean-Louis; and Robin, Jean, to Rhone-Poulenc Industries. Polyisocyanato/imido compositions and imide group containing polymers prepared from polyisocyanate, polyimide and copolymerizable comonomer. 4,342,861, Cl. 528-59.000.
Loeffler, Herbert H., to Arthur D. Little, Inc. Portable water distiller. 4,342,623, Cl. 202-83.000.
Lofgren, Stig-Gunnar; and Ekeborg, Bo G., to Mo och Domsjo Aktiebolag. Digging and planting machine. 4,342,270, Cl. 111-1.000.
Lohlein, Wolfdieter: *See*—
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Look, Merton A.: *See*—
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Lopatin, George; Coplan, Myron J.; and Walton, James P., Jr., to Albany International Corp. Open-celled microporous sorbent-loaded textile fibers and films and methods of fabricating same. 4,342,811, Cl. 428-220.000.
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Sebag, Henri; and Vanlerberghe, Guy, 4,342,742, Cl. 424-59.000.
Lorenz, Otto; and Keller, Merten. Tilt-box for guiding a continuously moving web. 4,342,412, Cl. 226-21.000.
Lorteije, Jean H. J., to U.S. Philips Corporation. Display device having a liquid crystal. 4,342,994, Cl. 340-784.000.
Lorusso, Simone: *See*—
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Loser, Harald; Schmidt, Gerhard; Warzawa, Wolfgang; and Wegner, Klaus. Process for the coating of particles for the production of fuel and/or absorbing elements for nuclear reactors and apparatus therefor. 4,342,284, Cl. 118-716.000.
Lovera, Bruno; Pancotti, Santino; Pariani, Emilio; and Virtuani, Giuseppe, to Costruzioni Aereonautiche Giovanni Agusta S.p.A. Articulated rotor for helicopters. 4,342,540, Cl. 416-140.000.
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Cozzi, Paolo; Mongelli, Nicola; Pillan, Antonio; Bergamaschi, Maria; and Lovisolo, Pier P., 4,342,775, Cl. 424-273.00R.
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Lowi, Alvin, Jr., to Daeco Fuels and Engineering Company. Combined engine cooling system and waste-heat driven heat pump. 4,342,200, Cl. 62-191.000.
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Rath, Heinrich B.; and Wienand, Hans J., 4,342,382, Cl. 188-73.450.
Luczak, Joseph J.; and Nagati, Rashed N., to Pennsylvania Engineering Corp. Self-aligning trunnion bracket for metallurgical vessels. 4,342,445, Cl. 266-296.000.
Luh, Howard H., to Ford Aerospace & Communications Corporation. Paraboloidal reflector spatial filter. 4,343,002, Cl. 343-753.000.
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Kwon, Joon T., 4,342,703, Cl. 260-453.0RX.
Tsao, Utah, 4,342,735, Cl. 423-356.000.
Lund, Arnold M.; and Lund, Morten A. Control system for slitter-rewinder apparatus. 4,342,432, Cl. 242-56.200.
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Lundblad, Leif J. I. Dispensing apparatus. 4,342,325, Cl. 133-1.00R.
Lutz, Felix; Seibold, Gerhard; Wessel, Gerhard; and Lauckner, Joachim, to International Standard Electric Corporation. Facsimile recorder. 4,343,009, Cl. 346-108.000.
Luyckx, Leon A. Exothermic steel ladle desulfurizer and method for its use. 4,342,590, Cl. 75-58.000.
Lydall, Kenneth: *See*—
Ennis, Brian J.; and Lydall, Kenneth, 4,342,137, Cl. 19-97.000.
Lyden, Frank J., to Oil-Rite Corporation. Porous rod metering valve. 4,342,375, Cl. 184-65.000.
Lyden, Frank J., to Oil-Rite Corporation. Adjustable constant level oiler and tool for making adjustments. 4,342,376, Cl. 184-103.00R.
M.A.N. Maschinenfabrik Augsburg-Nuernberg AG: *See*—
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Macedo, Pedro B.; Litovitz, Theodore A.; Lagakos, Nicholas; Mohr, Robert K.; and Meister, Robert, to Macedo, Pedro B.; and Litovitz, Theodore A. Optical sensing apparatus and method. 4,342,907, Cl. 250-227.000.
Macidull, John C., to United States of America, Navy. Aircraft self-protection radar. 4,343,000, Cl. 343-705.000.
Mack, Karl; and Maly, Zdenek, to Swiss Aluminium Ltd. Process and device for filling with a hardenable filler gaps where corrosive attack can occur in tube and fin type heat exchangers. 4,342,150, Cl. 29-726.000.
Mackles, Leonard, to Bristol-Myers Company. Roll-on dispenser with a flexible membrane. 4,342,522, Cl. 401-214.000.
Maddock, Thomas J. Band saw jig. 4,342,450, Cl. 269-87.000.
Madsen, Ricky J.: *See*—
Kronfeld, Leonard E.; Winkler, Thomas J.; and Madsen, Ricky J., 4,343,025, Cl. 360-104.000.
Maebara, Isao; and Fujio, Koichiro, to Ishikawajima-Kenzai Kogyo Co., Ltd. Core for use in casting hollow concrete slab and method of casting such slab. 4,342,441, Cl. 249-65.000.
Maender, Otto W.; and Morita, Eiichi, to Monsanto Company. Methylene thioethers. 4,342,705, Cl. 260-465.00D.
Magdanyi, Laszlo: *See*—
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Mahajan, Gautam K.: *See*—
Krishnakumar, Suppayan M.; Pocock, John F. E.; Mahajan, Gautam K.; and Trembly, John F., 4,342,895, Cl. 219-10.430.
Mahmood, Mahmood N.: *See*—
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Mahoney, Thomas P.: *See*—
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Majerus, John N., to United States of America, Army. Shaped charge warhead with mechanical means for preventing rotation. 4,342,261, Cl. 102-307.000.
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Mann, William F.; and Smith, Thomas J., to Colloids, Inc. Method of reducing water demand of alkaline aqueous suspensions. 4,342,599, Cl. 106-100.000.
Manville Service Corporation: *See*—
Ray, Richard J., Jr., 4,342,610, Cl. 156-62.600.
Marcus, Michael A.; and Lee, James K., to Eastman Kodak Company. High deflection bandwidth product polymeric piezoelectric flexure mode device and method of making same. 4,342,936, Cl. 310-330.000.
Marcus, Sanford M.; and Rellick, Joseph R., to Du Pont de Nemours, E. I., and Company. Solar cell metallizations comprising a nickel-antimony alloy. 4,342,795, Cl. 427-75.000.
Margittai, Agnes: *See*—
SpringThorpe, Anthony J.; and Margittai, Agnes, 4,342,148, Cl. 29-569.00L.
Marjollet, Jacques; Mevel, Jean-Claude; Palacio, Gerard; and Tondeur, Gerard, to Societe Anonyme dite: Stein Industrie. Apparatus for separating droplets of liquid entrained in a gas or a vapor. 4,342,570, Cl. 55-418.000.
Markovits, Gary: *See*—
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Markowski, Steven G.: *See*—
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Marx, Thomas O., to Atwood Vacuum Machine Company. Gas spring with tubular shell seal. 4,342,447, Cl. 267-64.230.
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Masaki, Kenji: *See*—
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Mason, James D.: *See*—
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Mason, Paul C.: *See*—
Smith, Jack E., Jr.; and Mason, Paul C., 4,343,039, Cl. 369-28.000.
Massa, Frank, to Stoneleigh Trust, The, Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees. Apparatus and method for the non-destructive testing of the physical integrity of a structural part. 4,342,229, Cl. 73-579.000.
Massachusetts Institute of Technology: *See*—
Melngailis, John; Haus, Hermann A.; and Lattes, Ana L., 4,342,970, Cl. 333-142.000.
Mastriani, Elvin A., to Arrow Converting Equipment Inc. Air differential mandrel and method of differentially winding and rewinding tapes. 4,342,433, Cl. 242-72.00B.
Mastronuzzi, Carl T., Jr. Retractable speed bump. 4,342,525, Cl. 404-6.000.
Masuda, Shunichi: *See*—
Shimizu, Katsuichi; Masuda, Shunichi; and Sakamaki, Hisashi, 4,343,036, Cl. 364-518.000.
Mathes, Nikolaus: *See*—
Gerlach, Klaus; Mathes, Nikolaus; Pitowski, Hans-Jurgen; and Wechs, Friedbert, 4,342,801, Cl. 428-91.000.
Mathews, Paul B., to United States of America, Army. Means and method for testing laser range finders. 4,342,514, Cl. 356-5.000.
Matoba, Yasuo: *See*—
Suzui, Akio; and Matoba, Yasuo, 4,342,851, Cl. 525-403.000.
Matsuda, Makoto: *See*—
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Matsuda, Minoru, to Nissan Motor Co., Ltd. Frame structure for a fork lift truck. 4,342,470, Cl. 280-785.000.
Matsuda, Toshio: *See*—
Ueno, Ryuzo; Matsuda, Toshio; Inamine, Shigeo; Kanayama, Tatsuo; and Fujita, Yatsuka, 4,342,789, Cl. 426-266.000.
Yamada, Kaichi; Morikawa, Yoshiyuki; Fujio, Katuharu; Yoshihiro, Koichi; Matsuda, Toshio; and Taguchi, Tatsuhisa, 4,342,547, Cl. 418-84.000.
Matsui, Shigetomo: *See*—
Susei, Shuzo; Matsui, Shigetomo; and Nagai, Hiroyoshi, 4,342,900, Cl. 219-121.0EN.
Matsukawa, Hiroharu: *See*—
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Matsumoto, Haruo: *See*—
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Matsumoto, Kenji: *See*—
Yokota, Yukio; Sato, Masamichi; and Matsumoto, Kenji, 4,342,818, Cl. 430-7.000.
Matsunaga, Mitsuro: *See*—
Ohshima, Kazushi; Matsunaga, Mitsuro; Sekiguchi, Haruo; Imaoka, Kazuhiro; and Hayashi, Fujio, 4,342,589, Cl. 75-0.5BA.
Matsuo, Hiroshi; and Omata, Nobuaki, to Sharp Corporation; and Nifco Inc. Device for moderating movement of lid. 4,342,135, Cl. 16-82.000.
Matsuoka, Yoshitaka: *See*—
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Yamada, Kaichi; Morikawa, Yoshiyuki; Fujio, Katuharu; Yoshihiro, Koichi; Matsuda, Toshio; and Taguchi, Tatsuhisa, 4,342,547, Cl. 418-84.000.
Matsushita Electric Works, Ltd.: *See*—
Kashima, Isoo; Takase, Yosio; and Mishina, Masami, 4,342,885, Cl. 200-47.000.
Nakano, Kunimitsu; and Takemura, Kunio, 4,342,974, Cl. 335-10.000.
Matta, Galal N., to United States of America, Army. Two stage float valve. 4,342,328, Cl. 137-135.000.
Matthes, William R., to General Motors Corporation. Stratified charge engine with charge preparation means. 4,342,300, Cl. 123-430.000.
Matthews, Hugh B., to Sperry Corporation. Geothermal pump downhole energy regeneration system. 4,342,197, Cl. 60-641.400.
Mauldin, Charles H.; and Baird, William C., Jr., to Exxon Research & Engineering Co. Reforming with multimetallic catalysts. 4,342,644, Cl. 208-139.000.
Maurer, Fritz: *See*—
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Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Johnson, Mark; and Ulrich, Reinhard, 4,342,517, Cl. 356-350.000.
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Tincher, Cline A.; and Maxwell, Jerrold F., 4,342,658, Cl. 252-32.500.
May, John B.: *See*—
DiMassimo, Donald V.; and May, John B., 4,342,922, Cl. 307-66.000.
Mayer, Reinhart; Fester, Walter; and Kleber, Rolf, to Hoechst Aktiengesellschaft. Process for the manufacture of viscoses. 4,342,600, Cl. 106-164.000.
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Mazzotta, Paul F.: *See*—
Rick, Randy L.; Mazzotta, Paul F.; and Daiello, Cosimo D., 4,342,323, Cl. 132-37.00R.
McCartney, John, to Norwood Industries, Inc. Simulated leather sheet material. 4,342,805, Cl. 428-151.000.
McClure, Kenneth R., to Dickey Manufacturing Company. Security seal with break-off screw head securement. 4,342,477, Cl. 292-307.00R.
McCombs, Norman R.; and Schlaechter, John, to Greene & Kellogg, Incorporated. Compact oxygen concentrator. 4,342,573, Cl. 55-161.000.
McCord, Robert L. Fuel vaporizer and carburetor preheater system. 4,342,303, Cl. 123-557.000.
McCormick, Robert C.; and McCormick, Tom H. String mounting pitch changing apparatus for a pedal steel guitar. 4,342,249, Cl. 84-312.00P.
McCormick, Tom H.: *See*—
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McDowell, Hunter L.: *See*—
Heim, Werner F.; and McDowell, Hunter L., 4,342,632, Cl. 204-192.0EC.
McEntire, Edward E.: *See*—
Zimmerman, Robert L.; and McEntire, Edward E., 4,342,687, Cl. 260-243.300.
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., to American Cyanamid Company. ω-Heteroaroyl(-propionyl or butyryl)-L-prolines. 4,342,689, Cl. 260-326.340.
McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., to American Cyanamid Company. ω-Heteroaroyl(-propionyl or butyryl)-L-prolines. 4,342,690, Cl. 260-326.340.

McEvoy, Francis J.; Wright, William B., Jr.; Birnberg, Gary H.; and Albright, Jay D., to American Cyanamid Company. ω-Heteroaroyl(-propionyl or butyryl)-L-prolines. 4,342,691, Cl. 260-326.360.

McGalliard, James D. Printed circuit fuse assembly. 4,342,977, Cl. 337-4.000.

McGraw-Edison Company: *See*—
Date, K. Henry; and Wainio, Ronald, 4,343,030, Cl. 361-335.000.

McLennan, Lloyd K.; and Lacell, Albert, to General Electric Company. Radio having a crescendo audio alarm. 4,343,043, Cl. 455-231.000.

McMahon, Thomas A.; and Greene, Peter R. Biomechanically tuned shoe construction. 4,342,158, Cl. 36-35.00R.

McMillan, Fraser; Guthrie, Graeme J.; and Williams, David J., to Commonwealth Industrial Gases Limited, The. Treatment of scrap. 4,342,647, Cl. 209-3.000.

McMillin, Danny L.; and Stirbis, James S., to Coors Container Company. Apparatus for printing articles from heat transfer paper. 4,342,281, Cl. 118-32.000.

McMordie, James R.: *See*—
Clark, Amos S., Jr.; McMordie, James R.; and Walker, Michael D., 4,342,130, Cl. 15-312.00A.

McVeigh, Peter J.; and Rudish, Ronald M., to Eaton Corporation. High accuracy feedback control system for a phased array antenna. 4,343,006, Cl. 343-854.000.

McVey, Charles I., to General Electric Company. Universal burning ceramic lamp. 4,342,939, Cl. 313-174.000.

Mead, Robert H.: *See*—
Ledvina, Timothy J.; and Mead, Robert H., 4,342,560, Cl. 474-157.000.

Medical Engineering Corporation: *See*—
Trick, Robert E., 4,342,308, Cl. 128-79.000.

Medtronic, Inc.: *See*—
Engle, William R.; and Rockland, Ronald H., 4,342,318, Cl. 128-708.000.

Meier, Horst P.: *See*—
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Meier, Paul L. High speed stripping apparatus. 4,342,326, Cl. 134-102.000.

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Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, 4,342,847, Cl. 525-66.000.

Meister, Otto, to S&C Electric Company. Explosively-actuated switch and current limiting, high voltage fuse using same. 4,342,978, Cl. 337-6.000.

Meister, Robert: *See*—
Macedo, Pedro B.; Litovitz, Theodore A.; Lagakos, Nicholas; Mohr, Robert K.; and Meister, Robert, 4,342,907, Cl. 250-227.000.

Melikian, Zograb A.; Oganian, Larisa G.; Simonian, Arsen S.; and Kirakosian, Robert T. Room ejection unit of central air-conditioning. 4,342,204, Cl. 62-304.000.

Melinat, Wolfgang, to General Motors Corporation. Light weight disc brake caliper. 4,342,380, Cl. 188-71.100.

Melngailis, John; Haus, Hermann A.; and Lattes, Ana L., to Massachusetts Institute of Technology. Acoustic wave device. 4,342,970, Cl. 333-142.000.

Menassa, Karim: *See*—
Lindmayer, Istvan; and Menassa, Karim, 4,342,310, Cl. 128-207.250.

Mera, Hiroshi: *See*—
Shimada, Keizo; Aoki, Akihiro; Mera, Hiroshi; and Nakamura, Tsutomu, 4,342,715, Cl. 264-184.000.

Merck & Co., Inc.: *See*—
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Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,757, Cl. 424-246.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,869, Cl. 544-21.000.
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,342,776, Cl. 424-274.000.
Cragoe, Edward J., Jr., 4,342,782, Cl. 424-330.000.
Firestone, Raymond A., 4,342,758, Cl. 424-246.000.
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,342,872, Cl. 546-186.000.
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,342,873, Cl. 546-186.000.
Kang, Kenneth S.; and Veeder, George T., 4,342,866, Cl. 536-119.000.
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Merloz, Pierre: *See*—
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Merrell-Toraude et Cie: *See*—
Bey, Philippe; and Jung, Michel, 4,342,780, Cl. 424-319.000.

Mertens, Josephus C.: *See*—
Kennis, Ludo E. J.; and Mertens, Josephus C., 4,342,870, Cl. 544-282.000.

Meschi, Luciano. Blank for the transmission of information having improved preglued sealing areas. 4,342,418, Cl. 229-92.100.

Metallurgical, Inc.: *See*—
Withers, James C.; and Upperman, Gary V., 4,342,637, Cl. 204-282.000.

Metzger, Klaus: *See*—
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Marjollet, Jacques; Mevel, Jean-Claude; Palacio, Gerard; and Tondeur, Gerard, 4,342,570, Cl. 55-418.000.

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Erickson, Ernest A.; Hanson, Rodger D.; and Mews, Lance D., 4,342,373, Cl. 181-266.000.

Meyer, Larry P.; and Dauterman, David C., to Nelson Irrigation Corporation. Combined rotary impulse sprinkler head and shut-off valve. 4,342,424, Cl. 239-233.000.

Meyer, Robert E.: *See*—
Perkins, William J.; Vest, William C.; Grannen, Walter A., III; and Meyer, Robert E., 4,342,442, Cl. 249-67.000.

Meynard, Jean-Yves, to Siplast S.A. Microporous bitumen coated under-roofing material. 4,342,804, Cl. 428-149.000.

Mezei, Tibor: *See*—
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Mickelson, Dale. Caster assembly. 4,342,134, Cl. 16-31.00R.

Microlife Technics, Inc.: *See*—
Raccach, Moshe, 4,342,786, Cl. 426-52.000.

Microwave Techniques: *See*—
Sewell, Donald N.; and Starbird, Dwight A., 4,342,474, Cl. 285-61.000.

Midway Fishing Tool Company: *See*—
Reed, Lehman T., 4,342,363, Cl. 166-97.000.

Midwest Plastic Fabricators, Inc.: *See*—
Moran, Thomas F., 4,342,475, Cl. 285-137.00R.

Miller, Steve: *See*—
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Millipore Corporation: *See*—
Abrahams, Louis; and Izod, Thomas P. J., 4,342,679, Cl. 524-401.000.

Mines et Produits Chimiques de Salsigne: *See*—
Lesoille, Marcel, 4,342,591, Cl. 75-101.00R.

Minnesota Mining and Manufacturing Company: *See*—
Onsager, Lloyd W., 4,342,904, Cl. 235-493.000.
Vanden Bergh, Jan D., 4,342,614, Cl. 156-541.000.

Minton, Keith G., to Hoover Company, The. Vacuum cleaner air flow sensing arrangement. 4,342,133, Cl. 15-339.000.

Mirkovitch, Velimir, to Zyma S.A. Use of polyvinyl alcohols for the treatment of lesions. 4,342,745, Cl. 424-78.000.

Misawa, Makoto: *See*—
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Mishina, Masami: *See*—
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Mitchell, James G.; and Mitchell, Winalee G. Apparatus for holding and protecting sterilizable instruments. 4,342,390, Cl. 206-363.000.

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Mitchell, James G.; and Mitchell, Winalee G., 4,342,390, Cl. 206-363.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
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Mitsubishi Gas Chemical Company, Inc.: *See*—
Sugio, Akitoshi; Amemiya, Akira; Kimura, Masaharu; Otuki, Yoshiharu; and Kawaguchi, Kiyokazu, 4,342,680, Cl. 524-100.000.

Mitsui Engineering and Shipbuilding Co., Ltd.: *See*—
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Mitsui Petrochemical Industries, Ltd.: *See*—
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Mitsui Toatsu Chemicals, Inc.: *See*—
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Miyamae, Toshiaki. Golf putting practice device. 4,342,455, Cl. 273-186.00A.

Miyamae, Toshiaki. Golf putting practice device. 4,342,456, Cl. 273-186.00A.

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Mizuno, Tadatoshi; Hosotani, Sumihiro; and Nishihara, Kaoru, to Kabushiki Kaisha Komatsu Seisakusho. Exhaust gas change-over apparatus. 4,342,333, Cl. 137-625.440.

Mo och Domsjo Aktiebolag: *See*—
Lofgren, Stig-Gunnar; and Ekeborg, Bo G., 4,342,270, Cl. 111-1.000.

Moates, Roger D.: *See*—
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Mobil Oil Corporation: *See*—
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Mohring, Gunter, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Directional antenna for microwave transmissions. 4,343,003, Cl. 343-781.00P.
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Froidh, Tor A.; and Widlund, Leif U. R., 4,342,562, Cl. 493-124.000.
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Monbaliu, Marcel J.: *See*—
Van Poucke, Raphael K.; Monbaliu, Marcel J.; and Vandewalle, Jan J., 4,342,825, Cl. 430-505.000.
Mongelli, Nicola: *See*—
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Bollinger, Frederic G., 4,342,586, Cl. 71-90.000.
Maender, Otto W.; and Morita, Eiichi, 4,342,705, Cl. 260-465.00D.
Montana, Antonio. Ladder support. 4,342,374, Cl. 182-45.000.
Montedison S.p.A.: *See*—
Di Toro, Vincenzo; Gozzo, Franco; Cecere, Mirella; Lorusso, Simone; and Garavaglia, Carlo, 4,342,773, Cl. 424-272.000.
Moore, Paul W. Cooling fabric. 4,342,203, Cl. 62-244.000.
Moore, Richard E.; and Mynderse, Jon S., to Eli Lilly and Company. Majusculamide C. 4,342,751, Cl. 424-177.000.
Moran, Thomas F., to Midwest Plastic Fabricators, Inc. Connector and adapter for duct systems for telephone cables and the like. 4,342,475, Cl. 285-137.00R.
Morgan, Daniel, to Bullet, Irving, Jr.; and Decuir, Maurice M., part interest to each. Scooter with seat. 4,342,466, Cl. 280-87.030.
Morgan, Roger E., to Mobil Oil Corporation. High solids coating for rusty steels. 4,342,674, Cl. 523-177.000.
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Morrison, Charles A., to National Motor Spares Corporation. Battery terminal connector. 4,342,497, Cl. 339-228.000.
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Mose, Luciano: *See*—
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Motomura, Yoshie; Ishiyama, Jiro; and Shimizu, Junichi, to Kikkoman Corporation. Method for obtaining fruits having good flavor and taste. 4,342,585, Cl. 71-86.000.
Motorola, Inc.: *See*—
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Mousselli, Al H., to Applied Offshore Technology, Inc. Submersible backfill machine. 4,342,526, Cl. 405-159.000.
Mrusko, Joseph P.; and Everdyke, Wayne D., to Xerox Corporation. Triggering device for a flash lamp. 4,342,940, Cl. 313-198.000.
Muehling, Richard C.: *See*—
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Muller, Ortwin; Biber, Klaus; Schmauder, Roland; and Spitznas, Manfred, to Carl Zeiss-Stiftung. Servoelectric micromanipulator for movement on spherical coordinates. 4,342,951, Cl. 318-625.000.
Multisonics, Inc.: *See*—
Pope, Richard N.; and Williamson, Richard A., 4,342,991, Cl. 340-726.000.
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Murata Kikai Kabushiki Kaisha: *See*—
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Murata Manufacturing Co., Ltd.: *See*—
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Biss, Rudy; and Nadeau, Raymond, 4,342,648, Cl. 209-166.000.
Nadin, Robert P.; Nicholakopoulos, Antonios; Urban, Joseph P.; and Markowski, Steven G., to Union Carbide Corporation. Method and apparatus for filling bulk material containers. 4,342,345, Cl. 141-392.000.
Nagai, Haruhiko: *See*—
Shibayama, Kouzaburo; Akiba, Toshimitsu; Nagai, Haruhiko; and Hishii, Masao, 4,343,040, Cl. 372-87.000.
Nagai, Hiroyoshi: *See*—
Susei, Shuzo; Matsui, Shigetomo; and Nagai, Hiroyoshi, 4,342,900, Cl. 219-121.0EN.
Nagashima, Masashi: *See*—
Murai, Ryuji; Watanabe, Toshihiko; Ogata, Yoji; Nagashima, Masashi; and Soga, Mitsurou, 4,342,897, Cl. 219-73.200.
Nagasu, Akira: *See*—
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.
Nagata, Takeo: *See*—
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.
Nagata, Wataru; and Aoki, Tsutomu, to Shionogi & Co., Ltd. Inversion of the 3 α-amino group attached to the β-lactam ring. 4,342,685, Cl. 260-239.00A.
Nagati, Rashed N.: *See*—
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Nagatomo, Hiroto: *See*—
Akiba, Masakuni; Nagatomo, Hiroto; and Suzuki, Jun, 4,342,515, Cl. 356-237.000.
Nagel, Ferenc, to Egyesult Izzolampa es Villamossagi Rt. Metal halogen vapor lamp provided with a heat reflecting layer. 4,342,937, Cl. 313-113.000.
Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, to American Cyanamid Company. Carbalkoxymethyl derivatives of rutin poly(H-)sulfate and method of use. 4,342,752, Cl. 424-180.000.
Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, to American Cyanamid Company. Carboxyalkyl derivatives of rutin poly(H-)sulfate. 4,342,753, Cl. 424-180.000.
Nakamura, Tsutomu: *See*—
Shimada, Keizo; Aoki, Akihiro; Mera, Hiroshi; and Nakamura, Tsutomu, 4,342,715, Cl. 264-184.000.
Nakano, Kunimitsu; and Takemura, Kunio, to Matsushita Electric Works, Ltd. Multipolar type circuit breaker. 4,342,974, Cl. 335-10.000.
Nanjo, Kazuko: *See*—
Harada, Takao; Ohashi, Hideaki; Koike, Wataro; Yazawa, Chihiro; and Nanjo, Kazuko, 4,342,859, Cl. 528-64.000.
Narra, Rama K., to E. R. Squibb & Sons, Inc. Red cell labeling vial. 4,342,724, Cl. 422-101.000.
Narra, Rama K.; and Kuczynski, Bruce L., to E. R. Squibb & Sons, Inc. Method and kit for labeling red blood cells with technetium-99m. 4,342,740, Cl. 424-1.000.
National Machinery Company, The: *See*—
Edmondson, Richard; and Wisebaker, Dale A., 4,342,233, Cl. 73-862.060.
National Motor Spares Corporation: *See*—
Morrison, Charles A., 4,342,497, Cl. 339-228.000.
National Starch and Chemical Corp.: *See*—
Perlinski, Witold; Davis, Irwin J.; and Romanick, John F., 4,342,843, Cl. 523-409.000.
National Steel Corp.: *See*—
Benton, Charles M.; Arnold, Franklin D.; Kellogg, George W.; and Kirk, Roger D., 4,342,178, Cl. 52-125.500.
National Technology Corporation: *See*—
Williams, Robert N., 4,342,559, Cl. 474-50.000.
Naugle, George H.: *See*—
Gordon, Robert L.; Naugle, George H.; and Cooper, Keith A., 4,342,183, Cl. 53-433.000.

NCR Corporation: *See—*
Bader, Leonhard; Giessner, Frank; Rombach, Friedrich B.; and Winter, Hermann, 4,343,013, Cl. 346-140.00R.
Neal, Carl R.: *See—*
Teague, Edward W.; Hance, Max H.; and Neal, Carl R., 4,342,565, Cl. 8-532.000.
Neefeldt, Edward F. Windshield wiper boot. 4,342,126, Cl. 15-250.420.
Negishi, Takao; and Tomiita, Kazuo, to Toray Industries, Inc. Apparatus for producing a bundle of fibrous elements. 4,342,189, Cl. 57-288.000.
Nehmiz, Peter: *See—*
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Nelmor Company, Inc.: *See—*
Fagnant, Norman A.; and Young, James L., 4,342,396, Cl. 209-546.000.
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Meyer, Larry P.; and Dauterman, David C., 4,342,424, Cl. 239-233.000.
Neubauer, Jeffrey A.; Reese, Walter J.; and Walker, Jimmy D., to PPG Industries, Inc. Mat width control. 4,342,581, Cl. 65-4.400.
Neuendorf, J. R. Pilot assembly for progressive die machines. 4,342,214, Cl. 72-404.000.
Newell, Chester W., to Newell Research Corporation. High-friction, low-elasticity drive belt for tape cartridges. 4,342,809, Cl. 428-215.000.
Newell Research Corporation: *See—*
Newell, Chester W., 4,342,809, Cl. 428-215.000.
Newman, Malcolm: *See—*
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Nicholl Brothers, Inc.: *See—*
Collins, John J., 4,342,953, Cl. 320-13.000.
Nickerson, James W., to Teledyne Industries, Inc. Valve guide and method for making same. 4,342,293, Cl. 123-188.0GC.
Nieda, Yasuhiro; and Honda, Kiyokazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing sealed-beam type electric bulb. 4,342,142, Cl. 29-25.130.
Niederdellmann, Georg: *See—*
Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, 4,342,847, Cl. 525-66.000.
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Tanaka, Toshie, 4,342,139, Cl. 24-292.000.
Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, to Sony Corporation. Chrominance signal processing circuit. 4,343,018, Cl. 358-28.000.
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Spaans, Cornelis; and Nijhof, Herman H., 4,342,162, Cl. 37-1.000.
Nikaido, Teruo, to Tomy Kogyo Company, Inc. Floating toy. 4,342,174, Cl. 46-92.000.
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Nippon Chemiphar Co., Ltd.: *See—*
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Nippon Kogaku K.K.: *See—*
Fujii, Norio; Kawahara, Atsushi; and Sawada, Masahiro, 4,342,905, Cl. 250-201.000.
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Nippon Oil Company, Ltd.: *See—*
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Nippon Telegraph & Telephone Public Corp.: *See—*
Nishimura, Kazutoshi; and Hirono, Tadashi, 4,343,023, Cl. 360-40.000.
Nippon Zeon Co., Ltd.: *See—*
Joh, Yasushi; Yamazaki, Masahiro; Kaneko, Noriaki; Oikawa, Shigehiko; Makuta, Yoshihiro; and Hayashi, Chizuko, 4,342,711, Cl. 264-41.000.
Nishihara, Kaoru: *See—*
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Nishikawa, Toshio; Ishikawa, Youhei; Tamura, Sadahiro; and Matsumoto, Haruo, to Murata Manufacturing Co., Ltd. Microwave device employing coaxial resonator. 4,342,972, Cl. 333-206.000.
Nishimura, Kazutoshi; and Hirono, Tadashi, to Nippon Telegraph & Telephone Public Corp. Magnetic recording and reproduction of digital information. 4,343,023, Cl. 360-40.000.
Nissan Motor Co., Ltd.: *See—*
Koshimaru, Hajime; and Ishii, Shoju, 4,342,213, Cl. 72-358.000.
Matsuda, Minoru, 4,342,470, Cl. 280-785.000.
Okamura, Kenji; and Masaki, Kenji, 4,342,230, Cl. 73-702.000.
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Nitto Boseki Co., Ltd.: *See—*
Kasai, Sin; Kawaguchi, Yutaka; and Satoh, Michio, 4,342,430, Cl. 242-18.00A.
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NL Industries, Inc.: *See—*
Herman, Daniel F.; and Kruse, Uno, 4,342,858, Cl. 526-317.000.
Norlin Industries, Inc.: *See—*
Gross, Glenn M., 4,342,245, Cl. 84-1.010.
Normann, Richard W.; and Niles, Paul D., to Bendix Corporation, The. Electrical connector assembly. 4,342,494, Cl. 339-105.000.
Northern Telecom, Inc.: *See—*
Wernet, William F.; and Miller, Steve, 4,342,883, Cl. 179-99.00R.
Northern Telecom Limited: *See—*
SpringThorpe, Anthony J.; and Margittai, Agnes, 4,342,148, Cl. 29-569.00L.
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Norton Company: *See—*
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Nortronics Company, Inc.: *See—*
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Notton, John H. F., to Johnson, Matthey & Co., Limited. Soldering composition. 4,342,606, Cl. 148-23.000.
Nozaki, Hisashi: *See—*
Katoh, Naboru; Komatsu, Kazumiya; and Nozaki, Hisashi, 4,342,790, Cl. 426-332.000.
Nozu, Takashi; Yamada, Minoru; and Watanabe, Yasuhiko, to Brother Kogyo Kabushiki Kaisha. Tapping machine. 4,342,528, Cl. 408-6.000.
NSK-Warner K.K.: *See—*
Yanagihara, Hideo, 4,342,435, Cl. 242-107.000.
Numata, Saburo; and Fujino, Shinichiro, to Fuji Photo Optical Co., Ltd. Automatic exposure control device for a single lens reflex camera. 4,342,505, Cl. 354-23.00D.
Nutrisearch Company: *See—*
Evans, John W.; Young, Gary C.; and Stager, Charles W., 4,342,604, Cl. 127-31.000.
O & K Orenstein & Koppel Aktiengesellschaft: *See—*
Reinecke, Udo; and Gerber, Jurgen, 4,342,254, Cl. 91-6.000.
Oestreich, Ulrich; and Zeidler, Guenter, to Siemens Aktiengesellschaft. High voltage stabile optical cable structures. 4,342,500, Cl. 350-96.230.
Officine Meccaniche Savi Antonio S.p.A.: *See—*
Savi, Antonio, 4,342,726, Cl. 422-302.000.
Oganian, Larisa G.: *See—*
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Ogasa, Katsuhiro: *See—*
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; Yamada, Muneo; and Watanabe, Yoshiteru, 4,342,828, Cl. 435-41.000.
Ogata, Yoji: *See—*
Murai, Ryuji; Watanabe, Toshihiko; Ogata, Yoji; Nagashima, Masashi; and Soga, Mitsurou, 4,342,897, Cl. 219-73.200.
Ohashi, Hideaki: *See—*
Harada, Takao; Ohashi, Hideaki; Koike, Wataro; Yazawa, Chihiro; and Nanjo, Kazuko, 4,342,859, Cl. 528-64.000.
Ohba, Masami: *See—*
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Ohm, Edward A., to Bell Telephone Laboratories, Incorporated. Broadband astigmatic feed arrangement for an antenna. 4,343,004, Cl. 343-781.00P.
Ohshima, Kazushi; Matsunaga, Mitsuro; Sekiguchi, Haruo; Imaoka, Kazuhiro; and Hayashi, Fujio, to Mitsui Toatsu Chemicals, Inc. Process for preparing iron compound particles for use in magnetic recording. 4,342,589, Cl. 75-0.5BA.
Oikawa, Shigehiko: *See—*
Joh, Yasushi; Yamazaki, Masahiro; Kaneko, Noriaki; Oikawa, Shigehiko; Makuta, Yoshihiro; and Hayashi, Chizuko, 4,342,711, Cl. 264-41.000.
Oil-Rite Corporation: *See—*
Lyden, Frank J., 4,342,375, Cl. 184-65.000.
Lyden, Frank J., 4,342,376, Cl. 184-103.00R.
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Akiyama, Hiroshi; and Oinuma, Koji, 4,342,839, Cl. 521-25.000.
Okabe, Kanae; and Murayama, Hiroo, to Yuhshin Co., Ltd.; and Nifco Inc. Apparatus for fastening inside handle cover to automobile door. 4,342,136, Cl. 16-115.000.
Okabe, Susumu; Sonehara, Takashi; Sato, Masaru; and Mazaki, Mitsuo, to Nippon Chemiphar Co., Ltd. N-Acylcarnosine aluminum salt, its preparation, and a digestive ulcer remedy containing such salt. 4,342,774, Cl. 424-273.00R.
Okai, Tadatake: *See—*
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Okamoto, Akira, to Murata Kikai Kabushiki Kaisha. Pirn exchange apparatus in double twister. 4,342,188, Cl. 57-89.000.

Okamura, Kenji; and Masaki, Kenji, to Nissan Motor Company, Limited. Pressure sensor and sensing method. 4,342,230, Cl. 73-702.000.

Okamura, Kiyohito: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,342,712, Cl. 264-63.000.

Oki Electric Industry Co., Ltd.: *See*—
Isobe, Minoru; Shimizu, Makoto; and Hagiwara, Shigemi, 4,342,520, Cl. 400-221.000.

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Oldham, Keith: *See*—
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O'Leary, James N.; and Bruzinski, Edward J. Method of bonding surfaces with a solid adhesive. 4,342,613, Cl. 156-310.000.

Olin Corporation: *See*—
Fuzesi, Stephen; and Bayusik, John G., 4,342,864, Cl. 536-18.000.
Wahlfeldt, Richard W.; and Field, David R., 4,342,251, Cl. 86-1.00R.

Omata, Nobuaki: *See*—
Matsuo, Hiroshi; and Omata, Nobuaki, 4,342,135, Cl. 16-82.000.

O'Neill, Michael L., to Joy Manufacturing Company. Cutter bit holder. 4,342,486, Cl. 299-86.000.

Onsager, Lloyd W., to Minnesota Mining and Manufacturing Company. Lightweight ferromagnetic marker for the detection of objects having markers secured thereto. 4,342,904, Cl. 235-493.000.

Oppama Kogyo Kabushiki Kaisha: *See*—
Watanabe, Hiromi, 4,342,304, Cl. 123-599.000.

Orion Industries, Inc.: *See*—
Valenzona, Joseph F.; and Hewitt, Lloyd, 4,342,946, Cl. 315-82.000.

Osaka Soda Co. Ltd.: *See*—
Suzui, Akio; and Matoba, Yasuo, 4,342,851, Cl. 525-403.000.

Ota, Naoto: *See*—
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Otake, Michiko, to Takara Co., Ltd. Toy medical office. 4,342,173, Cl. 46-1.00R.

Otis Elevator Company: *See*—
Games, John E.; and Hmelovsky, Michael W., 4,342,379, Cl. 187-29.00R.
Hmelovsky, Michael W., 4,342,378, Cl. 187-29.00R.

Otuki, Yoshiharu: *See*—
Sugio, Akitoshi; Amemiya, Akira; Kimura, Masaharu; Otuki, Yoshiharu; and Kawaguchi, Kiyokazu, 4,342,680, Cl. 524-100.000.

Oura, Masahisa: *See*—
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Owens-Corning Fiberglas Corporation: *See*—
Bhatti, Mohinder S.; and Marzocchi, Alfred, 4,342,577, Cl. 65-1.000.
Bhatti, Mohinder S.; and Higginbotham, James M., Sr., 4,342,578, Cl. 65-1.000.
Roberson, Cletis L., 4,342,580, Cl. 65-2.000.
Sanders, James E., 4,342,579, Cl. 65-2.000.

Owens-Illinois, Inc.: *See*—
Chang, Long F., 4,342,398, Cl. 215-1.00C.
Stengle, Edward J., Jr., 4,342,803, Cl. 428-131.000.
Weaver, Edward A., 4,342,943, Cl. 313-479.000.

Oy Nokia AB: *See*—
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Oyama, Masaru; and Takahashi, Kenji, to Sony Corporation. Tape cassette. 4,342,436, Cl. 242-199.000.

Ozite Corporation: *See*—
Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., 4,342,802, Cl. 428-92.000.

P C U K Produits Chimiques Ugine Kuhlmann: *See*—
Frank, Pierre; and Sailer, Andre L., 4,342,684, Cl. 260-159.000.

Paddock, Gordon R.; and Jones, John E., to General Motors Corporation. Electric air control switching valve. 4,342,194, Cl. 60-290.000.

Paetow, Jurgen, to Hottinger Baldwin Measurements, Inc. Strain gage pick-up and method for adjusting such strain gage pick-up. 4,342,217, Cl. 73-1.00B.

Palacio, Gerard: *See*—
Marjollet, Jacques; Mevel, Jean-Claude; Palacio, Gerard; and Tondeur, Gerard, 4,342,570, Cl. 55-418.000.

Palmer, David A.; and Holzhauer, Juergen K., to Standard Oil Company (Indiana). Process for production of maleic anhydride. 4,342,699, Cl. 549-259.000.

Palosi, Eva: *See*—
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,342,755, Cl. 424-244.000.

Pancotti, Santino: *See*—
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Pandiscio, Nicholas A.: *See*—
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Panthofer, Rudolf, to Tetra Werke Dr. rer. nat. Ulrich Baensch GmbH. Housing for aquarium filters having bayonet fastening means. 4,342,401, Cl. 220-301.000.

Panton-Moore, Lithia. Preparation for the care and conditioning of the feet. 4,342,743, Cl. 424-61.000.

Pappenheimer, John R.; Krueger, James M.; and Karnovsky, Manfred L., to President and Fellows of Harvard College. Sleep-promoting factor. 4,342,748, Cl. 424-95.000.

Paredes, Candelario. Seat and cover assembly for a toilet bowl. 4,342,124, Cl. 4-234.000.

Pariani, Emilio: *See*—
Lovera, Bruno; Pancotti, Santino; Pariani, Emilio; and Virtuani, Giuseppe, 4,342,540, Cl. 416-140.000.

Parish, Robert S.: *See*—
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Patnaik, Birendra K., to El Paso Polyolefins Company. Propylene polymerization process and product. 4,342,856, Cl. 526-125.000.

Patton, George A.; and Muehling, Richard C., to Akzona Incorporated. Electrical socket. 4,342,498, Cl. 339-256.00R.

Paulson, Eugene K. Pressure dump valve. 4,342,347, Cl. 141-98.000.

Pauvert, Joseph: *See*—
Jatteau, Michel; Chalmeton, Vincent; and Pauvert, Joseph, 4,342,916, Cl. 378-4.000.

Pavljuchenko, Valery N.: *See*—
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Payne, Frank: *See*—
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Peacock, Donald G.: *See*—
Changani, Pushkumar D.; Peacock, Donald G.; and Roberts, David, 4,342,800, Cl. 428-36.000.

Pellaton, Michel H., to France Ebauches S.A. Step-by-step miniature motor for watch movement. 4,342,930, Cl. 310-49.00R.

Pellew, Peter I. Protective garment for the legs of a quadruped of the horse genus and material for such garment. 4,342,185, Cl. 54-82.000.

Pennington, Raymond C.: *See*—
Jamison, Warren E.; and Pennington, Raymond C., 4,342,491, Cl. 308-239.000.

Pennsylvania Engineering Corp.: *See*—
Luczak, Joseph J.; and Nagati, Rashed N., 4,342,445, Cl. 266-296.000.

Pere, Gerard, to Creusot-Loire. Reciprocating pump. 4,342,544, Cl. 417-269.000.

Perkin-Elmer Corporation, The: *See*—
Buckley, William D., 4,342,917, Cl. 378-34.000.
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., 4,342,516, Cl. 356-332.000.
Shafer, David R., 4,342,503, Cl. 350-443.000.

Perkins, William J.; Vest, William C.; Grannen, Walter A., III; and Meyer, Robert E., to General Motors Corporation. Battery container mold. 4,342,442, Cl. 249-67.000.

Perkins, William R. Musical apparatus. 4,342,244, Cl. 84-1.010.

Perlick, Mark A.: *See*—
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Perlinski, Witold; Davis, Irwin J.; and Romanick, John F., to National Starch and Chemical Corp. Neoprene latex contact adhesives. 4,342,843, Cl. 523-409.000.

Permacel: *See*—
Doehnert, Donald F., 4,342,815, Cl. 428-522.000.

Perrotta, Kenneth A., to Whatman Reeve Angel Limited. Apparatus for and method of removing volatile boiler-feed additives from pressurized steam. 4,342,730, Cl. 423-215.500.

Pessina, Zinaida M.: *See*—
Ivanchev, Sergei S.; Pavljuchenko, Valery N.; Pessina, Zinaida M.; and Vasilieva, Elena D., 4,342,676, Cl. 524-458.000.

Petersen, Kurt E.; and Shartel, Anne C., to International Business Machines Corporation. Planar semiconductor three direction acceleration detecting device and method of fabrication. 4,342,227, Cl. 73-510.000.

Petocz, Lujza: *See*—
Berenyi nee Poldermann, Edit; Gorog, Peter; Grasser, Katalin; Kosoczky, Ibolya; Koracs nee Palotay, Agnes; and Petocz, Lujza, 4,342,766, Cl. 424-249.000.
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Petuskov, Vladimir: *See*—
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Petz, Karl; Rieger, Klaus; and Steidl, Dieter, to Hoechst Aktiengesellschaft. Dulling agent on the basis of wax for varnishes, and process for the manufacture thereof. 4,342,602, Cl. 106-316.000.

Petzold, W. Andreas, to Union Special G.m.b.H. Material sensing means for sewing machines. 4,342,273, Cl. 112-272.000.

Pfeifer, George F.; Koonce, George R.; and Phillips, Jack E., to General Electric Company. Optoelectronic absolute position encoder with an in-line gray code controlling vehicle acceleration. 4,342,910, Cl. 250-237.00G.

Pfizer Inc.: *See*—
Andrews, Glenn C., 4,342,695, Cl. 549-315.000.
Johnson, Michael R.; Schaaf, Thomas K.; and Hess, Hans-Jurgen E., 4,342,868, Cl. 542-431.000.
Kadin, Saul B., 4,342,781, Cl. 424-319.000.
Kellogg, Michael S., 4,342,768, Cl. 424-250.000.
Schnur, Rodney C., 4,342,771, Cl. 424-263.000.
Weeks, Paul D.; and Allingham, Robert P., 4,342,697, Cl. 549-396.000.

Philips, Nicholas A., to Container Corporation of America. Two-piece reclosable container. 4,342,416, Cl. 229-23.0BT.

Phillips, Ernest L., to Jet Accessories, Inc. Lighted circuit breaker. 4,342,979, Cl. 337-41.000.

Phillips, Jack E.: *See—*
Pfeifer, George F.; Koonce, George R.; and Phillips, Jack E., 4,342,910, Cl. 250-237.00G.

Phillips Petroleum Company: *See—*
Erickson, Wayne K., 4,342,813, Cl. 428-296.000.
Gentry, Cecil C.; and Small, William M., 4,342,360, Cl. 165-67.000.
Hogan, John P.; and Banks, Robert L., 4,342,854, Cl. 526-75.000.
Tuck, Lee, 4,342,550, Cl. 431-4.000.
Wilson, Joseph F.; and Parish, Robert S., 4,342,669, Cl. 252-602.000.

Pick, James M.: *See—*
Brown, Wade R.; and Pick, James M., 4,342,476, Cl. 292-201.000.

Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., to Ozite Corporation. Floor covering of needled woven fabric and nonwoven batt. 4,342,802, Cl. 428-92.000.

Pierson, Darrell E.: *See—*
Lichtenwalter, Robert H.; and Pierson, Darrell E., 4,342,348, Cl. 144-209.00R.

Pillan, Antonio: *See—*
Cozzi, Paolo; Mongelli, Nicola; Pillan, Antonio; Bergamaschi, Maria; and Lovisolo, Pier P., 4,342,775, Cl. 424-273.00R.

Ping, Wu. Automatic cigarette lighting case. 4,342,902, Cl. 219-268.000.

Pitney Bowes Inc.: *See—*
Tolmie, Robert J., Jr., 4,342,512, Cl. 355-14.0SH.

Pitowski, Hans-Jurgen: *See—*
Gerlach, Klaus; Mathes, Nikolaus; Pitowski, Hans-Jurgen; and Wechs, Friedbert, 4,342,801, Cl. 428-91.000.

Piusz, Peter G.: *See—*
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Plasko, Emil R., to Emerson Electric Co. Thermally actuatable electrical switch construction, conductive lead therefor and method of making the same. 4,342,982, Cl. 337-407.000.

Pocock, John F. E.: *See—*
Krishnakumar, Suppayan M.; Pocock, John F. E.; Mahajan, Gautam K.; and Trembly, John F., 4,342,895, Cl. 219-10.430.

Pogrzeba, Hans-Joachim: *See—*
Heyn, Klaus; and Pogrzeba, Hans-Joachim, 4,342,192, Cl. 60-39.18B.

Pohlmann, Fritz: *See—*
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Polaroid Corporation: *See—*
Johnson, Bruce K.; and Black, Kenneth P., 4,342,506, Cl. 354-27.000.
Johnson, Bruce K.; and Morse, John B., 4,342,507, Cl. 354-143.000.

Poletto, John F.: *See—*
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Nair, Vijay G.; Poletto, John F.; and Bernstein, Seymour, 4,342,753, Cl. 424-180.000.

Pollock, William H., to Combustion Engineering, Inc. Integral economizer steam generator. 4,342,286, Cl. 122-336.000.

Polukhin, Petr I.: *See—*
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P., 4,342,898, Cl. 219-76.140.

Polukhin, Vladimir P.: *See—*
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P., 4,342,898, Cl. 219-76.140.

Polygram GmbH: *See—*
Becker, Joahann; Koop, Hermann; and Schueddekopf, Hans, 4,342,635, Cl. 204-263.000.

Pomie, Pierre; and Verriere, Philippe, to Commissariat a l'Energie Atomique. Fast nuclear reactor. 4,342,721, Cl. 376-298.000.

Pope, Richard N.; and Williamson, Richard A., to Multisonics, Inc. Partial scrolling video generator. 4,342,991, Cl. 340-726.000.

Porritt, Kendall. Chain saw stand. 4,342,243, Cl. 83-574.000.

Porter, William F., to United States Gypsum Company. Apparatus for fiberization of mineral fiber having directional shroud. 4,342,582, Cl. 65-14.000.

Potomac Applied Mechanics, Inc.: *See—*
Spevak, Steven T., 4,342,492, Cl. 312-244.000.

Potter, James A. Retractable wind machine. 4,342,539, Cl. 416-9.000.

PPG Industries, Inc.: *See—*
Du Bois, Donald W.; and Darlington, William B., 4,342,629, Cl. 204-98.000.
Kapura, Edward M.; and Goode, Henry C., 4,342,583, Cl. 65-99.500.
Neubauer, Jeffrey A.; Reese, Walter J.; and Walker, Jimmy D., 4,342,581, Cl. 65-4.400.

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Llera, Santos A. A., 4,342,400, Cl. 215-256.000.

Preiser Scientific, Incorporated: *See—*
Collins, John F., 4,342,725, Cl. 422-126.000.

President and Fellows of Harvard College: *See—*
Pappenheimer, John R.; Krueger, James M.; and Karnovsky, Manfred L., 4,342,748, Cl. 424-95.000.

Preston, Joseph R.: *See—*
Berry, David A.; Preston, Joseph R.; and Hillenbrand, Louis J., 4,342,660, Cl. 252-49.600.

Pretorius, Willem J., to Bath, Christopher P., a part interest. Tethered ball game apparatus having eccentric tensioning means. 4,342,459, Cl. 273-413.000.

Priesnitz, Uwe: *See—*
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,342,704, Cl. 260-464.000.

Procter & Gamble Company, The: *See—*
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Professional Staff Association of the Rancho Los Amigos Hospital, Inc., The: *See—*
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Projected Lubricants, Inc.: *See—*
Jamison, Warren E.; and Pennington, Raymond C., 4,342,491, Cl. 308-239.000.

Provesan S.A.: *See—*
Esteve Soler, Jose, 4,342,763, Cl. 424-248.560.

Provesta Corporation: *See—*
Hitzman, Donald O.; and Hopkins, Thomas R., 4,342,835, Cl. 435-255.000.

Pruett, Roy L.; and Bradley, John S., to Exxon Research & Engineering Co. Bimetallic clusters of ruthenium with copper, silver and gold. 4,342,838, Cl. 518-713.000.

Public Health Laboratory Service, Center for Applied Microbiology & Research: *See—*
Atkinson, Anthony; Bruton, Christopher J.; Comer, Michael J.; and Sharp, Richard J., 4,342,827, Cl. 435-26.000.

Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel, to Synthelabo. Antithrombotic method. 4,342,759, Cl. 424-246.000.

Quaker Oats Company, The: *See—*
Robjent, Frederick B., 4,342,250, Cl. 84-377.000.

Queneau, Paul B.; Beckstead, Leo W.; and Hogsett, Robert F., to AMAX Inc. Process for digesting tungsten ores containing organic matter. 4,342,728, Cl. 423-61.000.

Quibell, Larry T.: *See—*
Boring, David E.; and Quibell, Larry T., 4,342,408, Cl. 222-566.000.

Quinlan, Patrick M., to Petrolite Corporation. Microbiocidal process using di-quaternary ammonium salts of α-1,4-thiazine alkanephosphonic acids. 4,342,584, Cl. 71-67.000.

Quiring, Bernd: *See—*
Goyert, Wilhelm; Meisert, Ernst; Grimm, Wolfgang; Eitel, Alfred; Wagner, Hans; Niederdellmann, Georg; and Quiring, Bernd, 4,342,847, Cl. 525-66.000.

Raccach, Moshe, to Microlife Technics, Inc. Method for fermenting vegetables. 4,342,786, Cl. 426-52.000.

Radcliffe, Daniel J.: *See—*
Reinicker, Donald C.; and Radcliffe, Daniel J., 4,342,335, Cl. 137-636.200.

Radeck, Friedrich: *See—*
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Radel, Clifford J.; and Thompson, Hugh A., to Procter & Gamble Company, The. Resilient plastic web exhibiting fiber-like properties. 4,342,314, Cl. 128-287.000.

Ralph, Harold D.: *See—*
Schenk, Dale C.; and Ralph, Harold D., 4,342,366, Cl. 172-643.000.

Ralph McKay Limited: *See—*
Johnson, William M.; Lindsay, Alan; and Klaassens, Harry, 4,342,166, Cl. 37-142.00A.

Ramqvist, Lars: *See—*
Sporrong, Malte; and Ramqvist, Lars, 4,342,588, Cl. 75-124.000.

Ramsland, August B.: *See—*
Hutter, Harold G.; and Ramsland, August B., 4,342,496, Cl. 339-177.00E.

Ransom, Frederick J., to Singer Company, The. Control grip for ansate self-propelled appliance. 4,342,369, Cl. 180-19.00H.

Ransome Hoffmann Pollard Limited: *See—*
Swinley, George, 4,342,490, Cl. 308-187.100.

Rasen, Alfred; Vollbrecht, Rolf; Schenesse, Klemens; and Behnke, Joachim, to Akzona Incorporated. Low density matting and process. 4,342,807, Cl. 428-180.000.

Rath, Heinrich B.; and Wienand, Hans J., to Lucas Industries Limited. Twin-pin sliding caliper disc brakes. 4,342,382, Cl. 188-73.450.

Ratzel, Rudiger: *See—*
van Wijhe, Albert; Munster, Ernst; Wagenbrenner, Gerhard; Rocker, Fritz; Armbruster, Joachim; Metzger, Klaus; and Ratzel, Rudiger, 4,342,934, Cl. 310-239.000.

Ray, Richard J., Jr., to Manville Service Corporation. Method for intermittently slitting and folding fibrous insulation. 4,342,610, Cl. 156-62.600.

Raychem Corporation: *See—*
Changani, Pushkumar D.; Peacock, Donald G.; and Roberts, David, 4,342,800, Cl. 428-36.000.

Raytheon Company: *See—*
Teich, Wesley W., 4,342,896, Cl. 219-10.55F.

RCA Corporation: *See—*
Berry, David A.; Preston, Joseph R.; and Hillenbrand, Louis J., 4,342,660, Cl. 252-49.600.
Hicks, James E., 4,343,028, Cl. 361-91.000.
Lagoni, William A., 4,343,019, Cl. 358-31.000.
Taylor, Byron K., 4,342,394, Cl. 206-521.000.
Wang, Chih C.; Ekstrom, Lincoln; Lausman, Thomas C.; and Wielicki, Henry, 4,342,659, Cl. 252-49.600.
Woodward, Oakley M.; and Henderson, John G. N., 4,342,999, Cl. 343-702.000.

Reba, Imants, to Crown Zellerbach Corporation. Turning bar for moving web. 4,342,413, Cl. 226-97.000.
Rebaudieres, Paul; and Azzi, Jean-Michel, to General Foods France S.A. Dessert preparation. 4,342,787, Cl. 426-103.000.
Rederiaktiebolaget Nordstjernan: *See—*
Sporrong, Malte; and Ramqvist, Lars, 4,342,588, Cl. 75-124.000.
Redifon Simulation Limited: *See—*
Bolton, Martin J. P., 4,343,037, Cl. 364-521.000.
Reed, Lehman T., to Midway Fishing Tool Company. Geothermal well head. 4,342,363, Cl. 166-97.000.
Reel, Henning; Kruckenberg, Winfried; and Schundehutte, Karl H., to Bayer Aktiengesellschaft. Azo dyes with carboxyl polyalkyleneoxy chain moiety. 4,342,683, Cl. 260-156.000.
Reese, Walter J.: *See—*
Neubauer, Jeffrey A.; Reese, Walter J.; and Walker, Jimmy D., 4,342,581, Cl. 65-4.400.
Regan, Robert J.; and Haugsjaa, Paul O., to GTE Laboratories Incorporated. High voltage, high frequency amplifier. 4,342,967, Cl. 330-277.000.
Regelman, Dale F.: *See—*
Alberino, Louis M.; and Regelman, Dale F., 4,342,841, Cl. 521-163.000.
Rehfeld, Frederick L. J., to General Motors Corporation. Air pump with centrifugal filter. 4,342,546, Cl. 418-47.000.
Reid, Janet G. Fireplace cleaner. 4,342,131, Cl. 15-327.00D.
Reif, Henry E.; Maruhnic, Peter; and Chervenak, Michael C., to Sun Tech, Inc.; and Hydrocarbon Research, Inc. Maximizing jet fuel from shale oil. 4,342,641, Cl. 208-89.000.
Reinecke, Udo; and Gerber, Jurgen, to O & K Orenstein & Koppel Aktiengesellschaft. Circuit for hydrostatically operable devices. 4,342,254, Cl. 91-6.000.
Reinicker, Donald C.; and Radcliffe, Daniel J., to Koehring Company. Hydraulic valve detent mechanism. 4,342,335, Cl. 137-636.200.
Rellick, Joseph R.: *See—*
Marcus, Sanford M.; and Rellick, Joseph R., 4,342,795, Cl. 427-75.000.
Renga, James M.; and Emmons, Albert H., to Dow Chemical Company, The. Electrical device containing an aryl sulfide dielectric liquid. 4,343,029, Cl. 361-315.000.
Research Associates, Ltd.: *See—*
Gray, James H., 4,342,387, Cl. 198-746.000.
Resnick, Lawrence. Business wallet construction. 4,342,350, Cl. 150-35.000.
Rheinmetall GmbH: *See—*
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Rhodes, Harold B.; and Murphy, James B., to CBS Inc. Multiple voice electric piano and method. 4,342,246, Cl. 84-1.040.
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Locatelli, Jean-Louis; and Robin, Jean, 4,342,861, Cl. 528-59.000.
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Richardson, Lloyd G.: *See—*
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Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,342,755, Cl. 424-244.000.
Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,342,754, Cl. 424-241.000.
Rick, Randy L.; Mazzotta, Paul F.; and Daiello, Cosimo D., to Shearpower International Corporation. Hair styling apparatus and techniques. 4,342,323, Cl. 132-37.00R.
Ricketts, Guy A. G.: *See—*
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Riddleberger, Dennis M.: *See—*
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Riebel, Hans-Jochem: *See—*
Hoffmann, Hellmut; Maurer, Fritz; Priesnitz, Uwe; and Riebel, Hans-Jochem, 4,342,704, Cl. 260-464.000.
Rieger, Klaus: *See—*
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Ritter, Gerhard, to Siemens Aktiengesellschaft. Alternating voltage amplifier circuit having a plurality of semiconductor amplifier elements operated in a grounded gate or grounded base configuration. 4,342,968, Cl. 330-295.000.
Ritter, Horst, to Dr. C. Otto & Comp. G.m.b.H. Method for removing hydrogen sulfide from coke oven gas. 4,342,731, Cl. 423-234.000.
Roberson, Cletis L., to Owens-Corning Fiberglas Corporation. Method of and means for monitoring filament break-outs or glass flood conditions in a glass filament-forming process. 4,342,580, Cl. 65-2.000.
Roberson, David L.: *See—*
Myers, Richard T.; and Roberson, David L., 4,342,969, Cl. 333-33.000.
Robert Bosch GmbH: *See—*
Straubel, Max; Greiner, Max; and Laufer, Helmut, 4,342,302, Cl. 123-502.000.
van Wijhe, Albert; Munster, Ernst; Wagenbrenner, Gerhard; Rocker, Fritz; Armbruster, Joachim; Metzger, Klaus; and Ratzel, Rudiger, 4,342,934, Cl. 310-239.000.
Roberts, David: *See—*
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Robertshaw Controls Company: *See—*
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Locatelli, Jean-Louis; and Robin, Jean, 4,342,861, Cl. 528-59.000.
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Rockwell International Corporation: *See—*
Anderson, Mardis V.; Griffee, Leslie V.; Grona, William H.; and Leverington, Richard D., 4,343,001, Cl. 343-745.000.
Ketchpel, Richard D., 4,342,945, Cl. 313-505.000.
Roesler, Richard R.: *See—*
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Roff, Robert W. Breather valve. 4,342,329, Cl. 137-202.000.
Rogers, C. David: *See—*
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Rohrbach, Hans-Joerg, to Rohrbach Technologie KG Baustofftechnik GmbH & Co. Production of expanded clay and shale. 4,342,554, Cl. 432-13.000.
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Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar RT. Tranquillo-sedative benzodiazepine derivatives. 4,342,755, Cl. 424-244.000.
Rolland, Philippe: *See—*
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Rolls-Royce Limited: *See—*
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Romanick, John F.: *See—*
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Rombach, Friedrich B.: *See—*
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Romer, Rudolf; Hellwig, Rolf; and Karius, Dietmar, to Rheinmetall GmbH. Carrier missile for ejectable bodies. 4,342,262, Cl. 102-489.000.
Rommel, Heinz, to Babcock Textilmaschinen KG (GmbH & Co.), Firma. Device for applying dye patterns onto continuously moving webs of material. 4,342,206, Cl. 68-205.00R.
Rooney, Clarence S.: *See—*
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Rosch, Hans: *See—*
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Rosemeier, Friedrich; and Kerber, Helmut, to Gambro Dialysatoren KG. Device for separating liquids, especially whole blood. 4,342,420, Cl. 233-28.000.
Rosenberg, Philip, to Kendall Company, The. Zero stasis catheter. 4,342,316, Cl. 128-349.00B.
Ross, Leonard W., Jr. Tarp enclosure for flat bed trailer and truck bodies. 4,342,480, Cl. 296-100.000.
Rossin Corporation: *See—*
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Rossin, John A., to Rossin Corporation. Intruder detection system. 4,342,987, Cl. 340-567.000.
Routt, Wilson M., Jr.; and VanHook, Danny A., to International Business Machines Corporation. Illumination system having an efficient light guide. 4,342,511, Cl. 355-1.000.
Rudish, Ronald M.: *See—*
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Russell, Robert J., to Honeywell Information Systems Inc. Automatic test equipment test probe contact isolation detection apparatus and method. 4,342,957, Cl. 324-73.00R.
Russell, Robert J., to Honeywell Information Systems Inc. Automatic test equipment test probe contact isolation detection method. 4,342,958, Cl. 324-73.00R.
Ryser, Heinrich, to Hasler AG. Pulse transformer. 4,342,976, Cl. 336-84.00C.
S&C Electric Company: *See—*
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Sack GmbH: *See—*
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Sado, Ryoichi; and Tahara, Kazutoki, to Shin-Etsu Polymer Co., Ltd. Gas-exchange sheet members. 4,342,723, Cl. 422-48.000.
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Sailer, Andre L.: *See—*
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Sakai, Katsuya; Mita, Ryuichi; Kato, Toshio; Higuchi, Chojiro; and Murakami, Hisamichi, to Mitsui Toatsu Chemicals, Inc. Oxidation-reduction reagents for a wet desulfurization process and a process for preparing same. 4,342,700, Cl. 260-370.000.
Sakamaki, Hisashi: *See—*
Shimizu, Katsuichi; Masuda, Shunichi; and Sakamaki, Hisashi, 4,343,036, Cl. 364-518.000.
Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, to Kanebo Ltd. 1,3-Dioxolen-2-one derivatives and process for production thereof. 4,342,693, Cl. 549-229.000.
Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; and Tsuyama, Shigeo, to Asahi Kasei Kogyo Kabushiki Kaisha. Hydrocarbon-soluble diorganomagnesium compounds, hydrocarbon solutions containing the same and processes for preparation thereof. 4,342,708, Cl. 260-665.00R.
Sala, Enrico; and Ricchetti, Rino. Apparatus for printing fabrics with a screen printing process. 4,342,260, Cl. 101-126.000.
Salani, Chittaranjan, to Koehring Company. High-low force amplitude device. 4,342,523, Cl. 404-117.000.
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Samuels, Philip R., to David Engineering Limited. Electric discharge lamp control converter circuits. 4,342,948, Cl. 315-290.000.
Sanders Associates, Inc.: *See—*
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Sanders, James E., to Owens-Corning Fiberglas Corporation. Method and apparatus for collecting strand. 4,342,579, Cl. 65-2.000.
Sanderson, Paul E. Dental flossing finger. 4,342,324, Cl. 132-92.00R.
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Ettmayer, Peter; and Kieffer, Richard, 4,342,594, Cl. 75-203.000.
Sanford, Carlton E., to Texas Instruments Incorporated. Normally closed pressure responsive switch with improved compact structure. 4,342,887, Cl. 200-83.00P.
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Sapozhnikov, Vladimir A.: *See—*
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Sarantakis, Dimitrios, to American Home Products Corporation. Somatostatin analogues. 4,342,671, Cl. 525-54.110.
Sato, Hideo: *See—*
Seki, Masao; and Sato, Hideo, 4,342,576, Cl. 55-452.000.
Sato, Kazuo, to Klane Corporation, The. Water induction system for internal combustion engines. 4,342,288, Cl. 123-25.00B.
Sato, Masamichi: *See—*
Yokota, Yukio; Sato, Masamichi; and Matsumoto, Kenji, 4,342,818, Cl. 430-7.000.
Sato, Masaru: *See—*
Okabe, Susumu; Sonehara, Takashi; Sato, Masaru; and Mazaki, Mitsuo, 4,342,774, Cl. 424-273.00R.
Satoh, Michio: *See—*
Kasai, Sin; Kawaguchi, Yutaka; and Satoh, Michio, 4,342,430, Cl. 242-18.00A.
Satterthwaite, J. Glenn; and Riddleberger, Dennis M. Double-acting inflatable seal. 4,342,336, Cl. 138-90.000.
Savage, Howard T., to United States of America, Navy. Angular accelerometer. 4,342,228, Cl. 73-517.00A.
Savi, Antonio, to Officine Meccaniche Savi Antonio S.p.A. Machine for sterilizing foodstuffs in cylindrical containers at normal atmospheric pressure. 4,342,726, Cl. 422-302.000.
Sawada, Fred H., to General Electric Company. Brush alignment apparatus. 4,342,960, Cl. 324-158.0MG.
Sawada, Masahiro: *See—*
Fujii, Norio; Kawahara, Atsushi; and Sawada, Masahiro, 4,342,905, Cl. 250-201.000.
Sayama Precision Industrial Co., Ltd.: *See—*
Fukase, Motonobu; Yokota, Toshikazu; and Oura, Masahisa, 4,342,384, Cl. 194-1.00C.
Scepter Manufacturing Co., Ltd.: *See—*
Torokvei, Thomas E., 4,342,388, Cl. 206-203.000.
Schaaf, Thomas K.: *See—*
Johnson, Michael R.; Schaaf, Thomas K.; and Hess, Hans-Jurgen E., 4,342,868, Cl. 542-431.000.
Schafer, Inge: *See—*
Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,342,754, Cl. 424-241.000.
Schainholz, Herbert. Instrument count memorizer. 4,342,391, Cl. 206-370.000.
Schall, William L., to Hooker Chemicals & Plastics Corp. Vinyl halide-polyolefin polymer and copolymers and method of making. 4,342,845, Cl. 525-53.000.
Schaum, Benny R. Hydraulically actuated food slicer. 4,342,242, Cl. 83-437.000.
Schenesse, Klemens: *See—*
Rasen, Alfred; Vollbrecht, Rolf; Schenesse, Klemens; and Behnke, Joachim, 4,342,807, Cl. 428-180.000.
Schenk, Dale C.; and Ralph, Harold D., to International Harvester Co. Soil mulcher. 4,342,366, Cl. 172-643.000.
Schering Corporation: *See—*
Steinman, Martin; and Tahbaz, Pirouz, 4,342,769, Cl. 424-251.000.
Scheuing, Claus: *See—*
Kallmeyer, Michael; Rosch, Hans; Scheuing, Claus; and Solf, Bernhard, 4,342,935, Cl. 310-328.000.
Schick, Ludwig, to Siemens Aktiengesellschaft. Circuit arrangement for interruption-free voltage switching. 4,342,925, Cl. 307-270.000.
Schiller, Arthur M.; and Balcerski, James S., to American Cyanamid Company. Process for scale inhibition in evaporative desalination units. 4,342,652, Cl. 210-698.000.
Schlaechter, John: *See—*
McCombs, Norman R.; and Schlaechter, John, 4,342,573, Cl. 55-161.000.
Schmanski, Donald W. Flexible street sign blank. 4,342,168, Cl. 40-607.000.
Schmauder, Roland: *See—*
Muller, Ortwin; Biber, Klaus; Schmauder, Roland; and Spitznas, Manfred, 4,342,951, Cl. 318-625.000.
Schmid Labs., Inc.: *See—*
Gordon, Harry W., 4,342,750, Cl. 424-122.000.
Schmidt, Gerhard: *See—*
Loser, Harald; Schmidt, Gerhard; Warzawa, Wolfgang; and Wegner, Klaus, 4,342,284, Cl. 118-716.000.
Schmitt, Frederick L.: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,342,663, Cl. 252-186.360.
Schmohl, Michael W., to Schmohl, Michael W. Low sport shoe. 4,342,161, Cl. 36-114.000.
Schnur, Rodney C., to Pfizer Inc. Hypoglycemic 5-substituted oxazolidine-2,4-diones. 4,342,771, Cl. 424-263.000.
Schrock, Clifford B.; and Gumm, Linley F., to Cablebus Systems Corporation. Bi-directional data transmission and control system. 4,343,042, Cl. 455-5.000.
Schueddekopf, Hans: *See—*
Becker, Joahann; Koop, Hermann; and Schueddekopf, Hans, 4,342,635, Cl. 204-263.000.
Schundehutte, Karl H.: *See—*
Reel, Henning; Kruckenberg, Winfried; and Schundehutte, Karl H., 4,342,683, Cl. 260-156.000.
Schuster, David A., to General Motors Corporation. Variable displacement pump. 4,342,545, Cl. 418-26.000.
Schwabe, Ulrich: *See—*
Jacobs, Erwin; Schwabe, Ulrich; and Takacs, Dezso, 4,342,149, Cl. 29-576.00B.
Schwartz, Frederic W., to Cable Electric Products, Inc. Light sensitive electrical device. 4,343,032, Cl. 362-276.000.
Schweizer, Ernst: *See—*
Ilvespaa, Atso; Frei, Jorg; and Schweizer, Ernst, 4,342,764, Cl. 424-248.560.
Schwochert, Hans-Joachim, to Kautex-Maschinebau GmbH. Hollow bodies and their manufacture. 4,342,799, Cl. 428-35.000.
SCM Corporation: *See—*
Walsh, Thomas J., 4,342,656, Cl. 210-770.000.
Scott, Douglas R.; and Payne, Frank, to Robertshaw Controls Company. Electrical switch construction diaphragm seal therefor and methods of making the same. 4,342,894, Cl. 200-304.000.
Scott, Ernest R., to Scott & Fetzer Company, The. Bag top cover assembly for a vacuum cleaner. 4,342,575, Cl. 55-378.000.
Scott & Fetzer Company, The: *See—*
Scott, Ernest R., 4,342,575, Cl. 55-378.000.
Scott, Larkin B.: *See—*
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., 4,342,516, Cl. 356-332.000.
Scott Machine Development Corporation: *See—*
Waldron, Gregory R., 4,342,155, Cl. 33-184.500.
Scott Paper Company: *See—*
Grant, Clyde P.; Look, Merton A.; and Lowe, Richard M., 4,342,823, Cl. 430-103.000.
Scripps Clinic & Research Foundation: *See—*
Theofilopoulos, Argyrios N.; and Dixon, Frank J., 4,342,566, Cl. 23-230.00B.
Sebag, Henri; and Vanlerberghe, Guy, to L'Oreal. Surface-active polysiloxanes. 4,342,742, Cl. 424-59.000.
Seibold, Gerhard: *See—*
Lutz, Felix; Seibold, Gerhard; Wessel, Gerhard; and Lauckner, Joachim, 4,343,009, Cl. 346-108.000.
Seitz-Werke GmbH: *See—*
Ahlers, Egon, 4,342,344, Cl. 141-39.000.
Seki, Masao; and Sato, Hideo, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Particle separator. 4,342,576, Cl. 55-452.000.
Sekiguchi, Haruo: *See—*
Ohshima, Kazushi; Matsunaga, Mitsuro; Sekiguchi, Haruo; Imaoka, Kazuhiro; and Hayashi, Fujio, 4,342,589, Cl. 75-0.5BA.
Seko, Yasutoshi; and Yanagishima, Takayuki, to Nissan Motor Company, Limited. Device for detecting steering angle and direction. 4,342,279, Cl. 116-31.000.
Selco Inc.: *See—*
Shepherd, Robert A., 4,342,913, Cl. 250-364.000.
Selwood, Alan, to Imperial Chemical Industries Limited. Stentered, bonded, heat-set, non-woven fabric and process for producing same. 4,342,812, Cl. 428-286.000.

Seven-Up Company, The: *See*—
Stirling, Robert F., 4,342,399, Cl. 215-12.00R.
Sewell, Donald N.; and Starbird, Dwight A., to Microwave Techniques. Waveguide hanger. 4,342,474, Cl. 285-61.000.
Sewell, Robert A.: *See*—
Clifford, David P.; and Sewell, Robert A., 4,342,770, Cl. 424-263.000.
Shafer, David R., to Perkin-Elmer Corporation, The. Catadioptric telescopes. 4,342,503, Cl. 350-443.000.
Shakhtarin, Valentin N.: *See*—
Glebov, Igor A.; Danilevich, Yanush B.; Ivanov, Sergeia A.; Karymov, Anatoly A.; Kotlyarova, Galina A.; Sapozhnikov, Vladimir A.; and Shakhtarin, Valentin N., 4,342,932, Cl. 310-52.000.
Shallhorn, Paul M.: *See*—
Karnis, Alkibiadis; and Shallhorn, Paul M., 4,342,618, Cl. 162-49.000.
Shargabian, Karl S.: *See*—
Koral, Joseph F.; Shargabian, Karl S.; and Strem, Ervin H., Jr., 4,342,482, Cl. 296-221.000.
Sharp Corporation: *See*—
Matsuo, Hiroshi; and Omata, Nobuaki, 4,342,135, Cl. 16-82.000.
Sharp, Richard J.: *See*—
Atkinson, Anthony; Bruton, Christopher J.; Comer, Michael J.; and Sharp, Richard J., 4,342,827, Cl. 435-26.000.
Shartel, Anne C.: *See*—
Petersen, Kurt E.; and Shartel, Anne C., 4,342,227, Cl. 73-510.000.
Shaw, David N.; and Gagnon, Joseph A. L. N., to Dunham-Bush, Inc. Screw compressor slide valve engine RPM tracking system. 4,342,199, Cl. 62-133.000.
Shealy, James R.: *See*—
Baliga, Bantval J.; and Shealy, James R., 4,343,015, Cl. 357-55.000.
Shearpower International Corporation: *See*—
Rick, Randy L.; Mazzotta, Paul F.; and Daiello, Cosimo D., 4,342,323, Cl. 132-37.00R.
Shebanits, Eduard N.: *See*—
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P., 4,342,898, Cl. 219-76.140.
Sheller-Globe Corporation: *See*—
Adcock, James L., 4,342,810, Cl. 428-215.000.
Shepherd, Robert A., to Selco Inc. Portable radiation dosimeter. 4,342,913, Cl. 250-364.000.
Sherman, Philip B., to Texaco Inc. Trace solvent recovery in selective solvent extraction. 4,342,646, Cl. 208-326.000.
Shibayama, Kouzaburo; Akiba, Toshimitsu; Nagai, Haruhiko; and Hishii, Masao, to Mitsubishi Denki Kabushiki Kaisha. Transverse excitation type laser oscillator. 4,343,040, Cl. 372-87.000.
Shima, George T., to Burroughs Corporation. Data network employing a single transmission bus for overlapping data transmission and acknowledgment signals. 4,342,995, Cl. 340-825.500.
Shimada, Keizo; Aoki, Akihiro; Mera, Hiroshi; and Nakamura, Tsutomu, to Teijin Limited. Process for preparing wholly aromatic polyamide shaped articles. 4,342,715, Cl. 264-184.000.
Shimada, Satoshi: *See*—
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.
Shimizu, Junichi: *See*—
Motomura, Yoshie; Ishiyama, Jiro; and Shimizu, Junichi, 4,342,585, Cl. 71-86.000.
Shimizu, Katsuichi; Masuda, Shunichi; and Sakamaki, Hisashi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,343,036, Cl. 364-518.000.
Shimizu, Makoto: *See*—
Isobe, Minoru; Shimizu, Makoto; and Hagiwara, Shigemi, 4,342,520, Cl. 400-221.000.
Shimura, Masahiro: *See*—
Kimura, Sakae; Shimura, Masahiro; and Okai, Tadatake, 4,342,662, Cl. 252-181.400.
Shin-Etsu Polymer Co., Ltd.: *See*—
Sado, Ryoichi; and Tahara, Kazutoki, 4,342,723, Cl. 422-48.000.
Shionogi & Co., Ltd.: *See*—
Nagata, Wataru; and Aoki, Tsutomu, 4,342,685, Cl. 260-239.00A.
Shirley, Donald J., to United States of America, Navy. Subseafloor environmental simulator. 4,342,518, Cl. 374-44.000.
Showa Denko K.K.: *See*—
Hohokabe, Yorikatsu; and Takiyama, Eiichiro, 4,342,863, Cl. 528-360.000.
Showa Highpolymer Co., Ltd.: *See*—
Hohokabe, Yorikatsu; and Takiyama, Eiichiro, 4,342,863, Cl. 528-360.000.
Shroot, Braham: *See*—
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel, 4,342,759, Cl. 424-246.000.
Shtarkman, Emile M.: *See*—
Eaton, Gerald E.; Shtarkman, Emile M.; and Snyder, Daniel S., 4,342,446, Cl. 267-35.000.
Shupert, Paul T., to Allis-Chalmers Corporation. Resonant sickle drive with spring means at opposite ends of the sickle. 4,342,187, Cl. 56-257.000.
Sibler, Guenter W., to Sutton Engineering Company. Indirect extrusion press. 4,342,212, Cl. 72-255.000.
Sickels, Anthony R.: *See*—
Sickels, Arthur C.; and Sickels, Anthony R., 4,342,356, Cl. 160-348.000.
Sickels, Arthur C.; and Sickels, Anthony R., to Soundfold, Inc. Combined fabric hanging and pleating bracket. 4,342,356, Cl. 160-348.000.
Siemens Aktiengesellschaft: *See*—
Jacobs, Erwin; Schwabe, Ulrich; and Takacs, Dezso, 4,342,149, Cl. 29-576.00B.
Oestreich, Ulrich; and Zeidler, Guenter, 4,342,500, Cl. 350-96.230.
Ritter, Gerhard, 4,342,968, Cl. 330-295.000.
Schick, Ludwig, 4,342,925, Cl. 307-270.000.
Wachs, Walter, 4,342,415, Cl. 228-39.000.
Sig Societe Industrielle Suisse: *See*—
Hurni, Hans, 4,342,263, Cl. 104-7.00B.
Silberberg, Joseph, to Stauffer Chemical Company. Blends of a polyester resin and impact resistant interpolymer. 4,342,846, Cl. 525-64.000.
Silvey, Fred H., to Irontite Products, Co. Inc. Engine cylinder head port closure pad clamp. 4,342,221, Cl. 73-49.700.
Simich, Emil, to A. J. Gerrard & Company. Oval bale-tie wire and process of making thereof. 4,342,138, Cl. 24-27.000.
Simonian, Arsea S.: *See*—
Melikian, Zograb A.; Oganian, Larisa G.; Simonian, Arsen S.; and Kirakosian, Robert T., 4,342,204, Cl. 62-304.000.
Singer Company, The: *See*—
Fromknecht, Charles T., 4,342,132, Cl. 15-339.000.
Ransom, Frederick J., 4,342,369, Cl. 180-19.00H.
Socha, Robert J., 4,342,271, Cl. 112-158.00E.
Transue, James A.; and Weisz, William, 4,342,272, Cl. 112-237.000.
Sinter Limited: *See*—
Caratsch, Hans-Peter, 4,342,718, Cl. 264-345.000.
Siplast S.A.: *See*—
Meynard, Jean-Yves, 4,342,804, Cl. 428-149.000.
Siraisi, Tadaaki: *See*—
Taniguchi, Koichi; Niwa, Kiyomi; and Siraisi, Tadaaki, 4,342,568, Cl. 48-111.000.
Skilling, James K., to GenRad, Inc. Method of electrical short testing and the like. 4,342,959, Cl. 324-73.0PC.
Skinner, Earl; Emeott, Marvin; and Jevne, Allan, to Henkel Corporation. Interpenetrating dual cure resin compositions. 4,342,793, Cl. 427-44.000.
Slater, Richard A.: *See*—
Watkins, Richard R.; and Slater, Richard A., 4,342,989, Cl. 340-723.000.
Sletzinger, Meyer: *See*—
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,757, Cl. 424-246.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,342,869, Cl. 544-21.000.
Sloan Kettering Institute for Cancer Research: *See*—
Katopodis, Nonda; and Stock, C. Chester, 4,342,567, Cl. 23-230.00B.
Sloan, Neil B. Combination hand gun holster and belt. 4,342,410, Cl. 224-243.000.
Sluys, Wesley W., to Builders Concrete, Inc. Interconnecting system for marine floats. 4,342,276, Cl. 114-266.000.
Sluys, Wesley W., to Builders Concrete, Inc. Anchoring system for floating moorage. 4,342,277, Cl. 114-293.000.
Small, Maynard E. Method of playing a mass circulation publication bingo type game. 4,342,457, Cl. 273-240.000.
Small, William M.: *See*—
Gentry, Cecil C.; and Small, William M., 4,342,360, Cl. 165-67.000.
Smith, Donald A. Prefabricated steel frame building construction components and methods. 4,342,177, Cl. 52-93.000.
Smith, Jack E., Jr.; and Mason, Paul C., to Lanier Business Products Co., Inc. Dictation-transcription method and system. 4,343,039, Cl. 369-28.000.
Smith, James L. Method and apparatus for calibrating firing pin impact. 4,342,223, Cl. 73-167.000.
Smith, Robert H. Sludge fixation and stabilization. 4,342,732, Cl. 423-242.000.
Smith, Thomas J.: *See*—
Mann, William F.; and Smith, Thomas J., 4,342,599, Cl. 106-100.000.
Smith, Walter J., to Huck Manufacturing Company. Multigrip fastener. 4,342,529, Cl. 411-361.000.
SmithKline Corporation: *See*—
Brush, Charles K.; and Weinstock, Joseph, 4,342,686, Cl. 260-239.0BB.
Smitley, Marion L., to Colt Industries Operating Corp. Vehicular energy storing means and system. 4,342,371, Cl. 180-165.000.
Snyder, Daniel S.: *See*—
Eaton, Gerald E.; Shtarkman, Emile M.; and Snyder, Daniel S., 4,342,446, Cl. 267-35.000.
Socha, Robert J., to Singer Company, The. Stitch length range indicating arrangement in a multiple pattern sewing machine. 4,342,271, Cl. 112-158.00E.
Societe Anonyme dite: Stein Industrie: *See*—
Marjollet, Jacques; Mevel, Jean-Claude; Palacio, Gerard; and Tondeur, Gerard, 4,342,570, Cl. 55-418.000.
Societe Chimique des Charbonnages—CdF Chimie: *See*—
Durand, Pierre; and Gloriod, Pierre, 4,342,853, Cl. 526-68.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Botrel, Yvon; Fremond, Roland; and Mourlevat, Jean, 4,342,519, Cl. 405-169.000.
Societe pour l'Equipement de Vehicules (S.E.V.): *See*—
Calvet, Pierre; Ching, Gil; and Rolland, Philippe, 4,342,232, Cl. 73-861.050.

Soga, Mitsurou: *See—*
Murai, Ryuji; Watanabe, Toshihiko; Ogata, Yoji; Nagashima, Masashi; and Soga, Mitsurou, 4,342,897, Cl. 219-73.200.
Solf, Bernhard: *See—*
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Solomon, Murray, to Solomon, Murray. Radiant energy collector with focal point between the plane of the frame and earth. 4,342,501, Cl. 350-296.000.
Solver, Carl E., to ASEA Aktiebolag. Circuit breaker with means for producing a flow of arc-extinguishing gas. 4,342,891, Cl. 200-148.00A.
Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, to Richter Gedeon Vegyeszeti Gyar RT. Steroid-spiro-oxathiazolidine derivatives and a process for the preparation thereof. 4,342,754, Cl. 424-241.000.
Somers, Edward V.: *See—*
Kothmann, Richard E.; and Somers, Edward V., 4,342,816, Cl. 429-13.000.
Sonderman, William G., to Xomox Corporation. Ball valve assembly. 4,342,444, Cl. 251-315.000.
Sonehara, Takashi: *See—*
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Sonoco Products Company: *See—*
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Sony Corporation: *See—*
Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, 4,343,018, Cl. 358-28.000.
Oyama, Masaru; and Takahashi, Kenji, 4,342,436, Cl. 242-199.000.
Tanaka, Shosuke; and Tatami, Mitsushige, 4,343,022, Cl. 360-36.000.
Wilkinson, James H., 4,343,017, Cl. 358-24.000.
Soundfold, Inc.: *See—*
Sickels, Arthur C.; and Sickels, Anthony R., 4,342,356, Cl. 160-348.000.
Southland Instruments, Inc.: *See—*
Lee, Peter F., 4,342,341, Cl. 141-1.000.
Southwire Co.: *See—*
Benton, Charles M.; Arnold, Franklin D.; Kellogg, George W.; and Kirk, Roger D., 4,342,178, Cl. 52-125.500.
Spaans, Cornelis; and Nijhof, Herman H., to B.V. Machinefabriek en Constructiewerkplaats Gebr. Klinkenberg. Device for planing a body of ground material. 4,342,162, Cl. 37-1.000.
Spectrum International, Inc.: *See—*
Box, Thomas, 4,342,393, Cl. 206-504.000.
Speedie, Robert, to Illinois Tool Works Inc. Flexible strap with integral attachment means. 4,342,438, Cl. 248-73.000.
Sperry Corporation: *See—*
Bowie, Robert A., 4,342,952, Cl. 318-654.000.
Easter, Finis C., 4,342,998, Cl. 343-17.10R.
Matthews, Hugh B., 4,342,197, Cl. 60-641.400.
Spurgin, William T.; and Wesner, Charles R., 4,342,274, Cl. 114-144.00E.
Spevak, Steven T., to Potomac Applied Mechanics, Inc. Portable article supporting container. 4,342,492, Cl. 312-244.000.
Spin Physics, Inc.: *See—*
Griffith, Neil J.; Jeffers, Fredrick J.; and Calaway, Ward M., 4,343,026, Cl. 360-113.000.
Spitznas, Manfred: *See—*
Muller, Ortwin; Biber, Klaus; Schmauder, Roland; and Spitznas, Manfred, 4,342,951, Cl. 318-625.000.
Sporrong, Malte; and Ramqvist, Lars, to Rederiaktiebolaget Nordstjernan. Wear resistant cast iron. 4,342,588, Cl. 75-124.000.
Sprecher & Schuh AG: *See—*
Graf, Rudolf, 4,342,890, Cl. 200-148.00A.
SpringThorpe, Anthony J.; and Margittai, Agnes, to Northern Telecom Limited. Contemporaneous fabrication of double heterostructure light emitting diodes and laser diodes using liquid phase epitaxy. 4,342,148, Cl. 29-569.00L.
SpringThorpe, Anthony J., to Northern Telecom Limited. Light emitting diodes with high external quantum efficiency. 4,342,944, Cl. 313-499.000.
Spurgin, William T.; and Wesner, Charles R., to Sperry Corporation. Steering failure alarm. 4,342,274, Cl. 114-144.00E.
Sriramamurty, Durvasula V.: *See—*
Karnowski, Gary A.; and Sriramamurty, Durvasula V., 4,342,963, Cl. 324-431.000.
Stackpole Components Company: *See—*
Ayers, Robert D., 4,342,892, Cl. 200-159.00A.
Stager, Charles W.: *See—*
Evans, John W.; Young, Gary C.; and Stager, Charles W., 4,342,604, Cl. 127-31.000.
Stanard, Michael. Self-mounting display calendar. 4,342,167, Cl. 40-121.000.
Standard Car Truck Co.: *See—*
Cooley, Donald B., 4,342,266, Cl. 105-226.000.
Standard Oil Company, The: *See—*
Bartek, Joseph P.; Grasselli, Robert K.; and Cepulis, Rimvydas L., 4,342,698, Cl. 549-505.000.
Standard Oil Company (Indiana): *See—*
Palmer, David A.; and Holzhauer, Juergen K., 4,342,699, Cl. 549-259.000.
Stangroom, James E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Hydraulic servo valve. 4,342,334, Cl. 137-625.480.
Stant Inc.: *See—*
Evans, John H., 4,342,208, Cl. 70-165.000.
Stapleton, John J., to International Telephone and Telegraph Corporation. Omnispectravision. 4,343,020, Cl. 358-81.000.
Starbird, Dwight A.: *See—*
Sewell, Donald N.; and Starbird, Dwight A., 4,342,474, Cl. 285-61.000.
Stauffer Chemical Company: *See—*
Jaffe, Fred, 4,342,709, Cl. 260-978.000.
Silberberg, Joseph, 4,342,846, Cl. 525-64.000.
Ste Look: *See—*
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Steag A.G.: *See—*
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Steelhammer, Joe C.; and Hutta, Paul J., to Betz Laboratories, Inc. Method of improving sulfite antioxidant performance in high solids scrubbers. 4,342,733, Cl. 423-242.000.
Steer, Jean A.: *See—*
Arai, Masaaki; Ohba, Masami; Ricketts, Guy A. G.; and Steer, Jean A., 4,342,744, Cl. 424-70.000.
Steidinger, Donald J.: *See—*
Heimann, Edward W.; and Steidinger, Donald J., 4,342,472, Cl. 282-11.50A.
Steidl, Dieter: *See—*
Petz, Karl; Rieger, Klaus; and Steidl, Dieter, 4,342,602, Cl. 106-316.000.
Steinbeck, Werner; and Gehrke, Gunter, to Bayer Aktiengesellschaft. Process for the preparation of 4,5-dinitro-1,8-dihydroxyanthraquinone. 4,342,701, Cl. 260-383.000.
Steinhage, Peter W., to Heimann GmbH. Thermal image exposure plate. 4,342,941, Cl. 313-374.000.
Steinman, Martin; and Tahbaz, Pirouz, to Schering Corporation. 2-[(Methylsulfinyl)acetyl]-3-heterocyclicindoles and derivatives thereof as immunosuppressants. 4,342,769, Cl. 424-251.000.
Stengle, Edward J., Jr., to Owens-Illinois, Inc. Heat-resistant vacuum pad and method of making same. 4,342,803, Cl. 428-131.000.
Stephenson, Robert L., to Allied Corporation. Motorized passive seat belt system. 4,342,471, Cl. 280-804.000.
Stepnov, Xenofont X.: *See—*
Gulakov, Sergei V.; Nosovsky, Boris I.; Leschinsky, Leonid K.; Stepnov, Xenofont X.; Polukhin, Petr I.; Nikolaev, Vladimir A.; Bendrik, Valery G.; Shebanits, Eduard N.; and Polukhin, Vladimir P., 4,342,898, Cl. 219-76.140.
Stikeleather, Larry F.; and Kaminski, Tony L., to Allis-Chalmers Corporation. Resonant sickle drive. 4,342,186, Cl. 56-257.000.
Stillings, Delia. Safety walker. 4,342,465, Cl. 280-87.02W.
Stirbis, James S.: *See—*
McMillin, Danny L.; and Stirbis, James S., 4,342,281, Cl. 118-32.000.
Stirling, Robert F., to Seven-Up Company, The. Composite bottle. 4,342,399, Cl. 215-12.00R.
Stirling, William, to Associated Octel Company, Ltd., The. Prefabricated laboratory unit and octane analyzer. 4,342,219, Cl. 73-35.000.
Stock, C. Chester: *See—*
Katopodis, Nonda; and Stock, C. Chester, 4,342,567, Cl. 23-230.00B.
Stolzer, Paul: *See—*
Gaiser, Ruprecht; and Stolzer, Paul, 4,342,240, Cl. 83-42.000.
Stone, Richard S.; and Chercasky, Morris, to Guardian Electric Manufacturing Company. Solenoid annunciator. 4,342,973, Cl. 335-2.000.
Stoneleigh Trust, The: *See—*
Massa, Frank, 4,342,229, Cl. 73-579.000.
Stout, Mike F.: *See—*
Brown, Roy N.; and Stout, Mike F., 4,342,796, Cl. 427-136.000.
Strasser, Bernd: *See—*
Strewe, Wolfgang; Mose, Luciano; and Strasser, Bernd, 4,342,630, Cl. 204-98.000.
Straubel, Max; Greiner, Max; and Laufer, Helmut, to Robert Bosch GmbH. Control apparatus for a fuel injection pump. 4,342,302, Cl. 123-502.000.
Strauss, Edgar H.: *See—*
Langen, Marinus J. M.; and Strauss, Edgar H., 4,342,808, Cl. 428-194.000.
Strem, Ervin H., Jr.: *See—*
Koral, Joseph F.; Shargabian, Karl S.; and Strem, Ervin H., Jr., 4,342,482, Cl. 296-221.000.
Strewe, Wolfgang; Mose, Luciano; and Strasser, Bernd, to Hooker Chemicals & Plastics Corp. Brine distribution system for electrolytic cells. 4,342,630, Cl. 204-98.000.
Strobel, Gary A., to Endowment and Alumni Foundation at Montana State University. Method for treating Dutch elm disease. 4,342,746, Cl. 424-93.000.
Strok, Jack M., to General Electric Company. Universal burning ceramic lamp. 4,342,938, Cl. 313-174.000.
Studnicka, Jan: *See—*
Jandera, Jan; and Studnicka, Jan, 4,342,225, Cl. 73-432.00R.
Suda, Minoru: *See—*
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,342,694, Cl. 549-273.000.
Sugihara, Hirosada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, to Takeda Chemical Industries, Ltd. 7-Acetylspirobenzofuranone compound. 4,342,779, Cl. 424-285.000.

Sugio, Akitoshi; Amemiya, Akira; Kimura, Masaharu; Otuki, Yoshiharu; and Kawaguchi, Kiyokazu, to Mitsubishi Gas Chemical Company, Inc. Stabilized oxymethylene copolymer composition. 4,342,680, Cl. 524-100.000.

Suh, John T.; Chung, Rack H.; Wang, Nai-Yi; and Barton, Jeffrey N., to USV Pharmaceutical Corporation. Pyrrolidines. 4,342,692, Cl. 260-326.460.

Summa, H. Wayne. Treadmill device. 4,342,452, Cl. 272-69.000.

Sun Tech, Inc.: *See—*
Reif, Henry E.; Maruhnic, Peter; and Chervenak, Michael C., 4,342,641, Cl. 208-89.000.

Susei, Shuzo; Matsui, Shigetomo; and Nagai, Hiroyoshi, to Kawasaki Jukogyo Kabushiki Kaisha. Vacuum shield device of an electron beam welding apparatus. 4,342,900, Cl. 219-121.0EN.

Sutton Engineering Company: *See—*
Sibler, Guenter W., 4,342,212, Cl. 72-255.000.

Suzui, Akio; and Matoba, Yasuo, to Osaka Soda Co. Ltd. Curable composition of halogen-containing polymer. 4,342,851, Cl. 525-403.000.

Suzuki, Hiroshige; and Hase, Teizo, to Suzuki, Hiroshige. Sinterable silicon carbide powders and sintered body produced therefrom. 4,342,837, Cl. 501-90.000.

Suzuki, Jun: *See—*
Akiba, Masakuni; Nagatomo, Hiroto; and Suzuki, Jun, 4,342,515, Cl. 356-237.000.

Suzuki, Kiyoshi, to Toshiba Electric Equipment Corporation. Marker light. 4,343,033, Cl. 362-307.000.

Suzuki, Yasuo: *See—*
Tamura, Akira; and Suzuki, Yasuo, 4,342,353, Cl. 152-362.00R.

Swenson Spreader Company: *See—*
Hoekstra, Ralph W., 4,342,163, Cl. 37-231.000.

Swigert, J. Kirk, to Xerox Corporation. Method for creating magnetic masters. 4,343,008, Cl. 346-74.200.

Swinley, George, to Ransome Hoffmann Pollard Limited. Bearing assemblies. 4,342,490, Cl. 308-187.100.

Swiss Aluminium Ltd.: *See—*
Blome, James C., 4,342,664, Cl. 252-313.00R.
Mack, Karl; and Maly, Zdenek, 4,342,150, Cl. 29-726.000.
Wagner, Alfred; and Ames, Adolf, 4,342,211, Cl. 72-253.100.

Sybron Corporation: *See—*
Fishbaugh, Warren D.; Batty, W. Lawson, Jr.; and Freedman, Frank J., 4,342,716, Cl. 264-225.000.

Synthelabo: *See—*
Morselli, Paolo L.; De Santis, Louis, Jr.; and Adamski, Robert, 4,342,783, Cl. 424-330.000.
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel, 4,342,759, Cl. 424-246.000.

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Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,342,871, Cl. 546-65.000.

Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Benzo(a)quinolizidine derivatives. 4,342,871, Cl. 546-65.000.

Sze, Morgan C.: *See—*
Bauer, William V.; and Sze, Morgan C., 4,342,642, Cl. 208-130.000.

Szeberenyi, Szabolcs: *See—*
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,342,755, Cl. 424-244.000.

Szilagyi nee Farago, Katalin: *See—*
Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,342,754, Cl. 424-241.000.

Szondy, Eleonora: *See—*
Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,342,754, Cl. 424-241.000.

Szporny, Laszlo: *See—*
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,342,755, Cl. 424-244.000.

Taguchi, Tatsuhisa: *See—*
Yamada, Kaichi; Morikawa, Yoshiyuki; Fujio, Katuharu; Yoshihiro, Koichi; Matsuda, Toshio; and Taguchi, Tatsuhisa, 4,342,547, Cl. 418-84.000.

Tahara, Kazutoki: *See—*
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Steinman, Martin; and Tahbaz, Pirouz, 4,342,769, Cl. 424-251.000.

Takacs, Dezso: *See—*
Jacobs, Erwin; Schwabe, Ulrich; and Takacs, Dezso, 4,342,149, Cl. 29-576.00B.

Takada, Juichiro. Child safety seat for vehicles. 4,342,483, Cl. 297-488.000.

Takahashi, Kenji: *See—*
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Takahashi, Yukio: *See—*
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.

Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; Yamada, Muneo; and Watanabe, Yoshiteru, to Morinaga Milk Industry Co., Ltd.; and Green Cross Corp., The. Method for producing substance capable of stimulating differentiation and proliferation of human granulopoietic stem cells. 4,342,828, Cl. 435-41.000.

Takara Co., Ltd.: *See—*
Otake, Michiko, 4,342,173, Cl. 46-1.00R.

Takase, Yosio: *See—*
Kashima, Isoo; Takase, Yosio; and Mishina, Masami, 4,342,885, Cl. 200-47.000.

Takashima, Toshiyuki: *See—*
Kondo, Kiyoshi; Takashima, Toshiyuki; and Suda, Minoru, 4,342,694, Cl. 549-273.000.

Takeda Chemical Industries, Ltd.: *See—*
Sugihara, Hirosada; Watanabe, Masazumi; Kawada, Mitsuru; and Imada, Isuke, 4,342,779, Cl. 424-285.000.

Takeda, Nobuyuki; and Iwata, Tadao, to Mitsui Petrochemical Industries, Ltd. Setting type resin composition containing a substantially linear, high-molecular-weight novolak substituted phenolic resin. 4,342,852, Cl. 525-481.000.

Takemura, Kunio: *See—*
Nakano, Kunimitsu; and Takemura, Kunio, 4,342,974, Cl. 335-10.000.

Takeno, Hidekazu: *See—*
Hashimoto, Masashi; Hemmi, Keiji; Aratani, Matsuhiko; Takeno, Hidekazu; and Hagiwara, Daijiro, 4,342,760, Cl. 424-246.000.

Takiyama, Eiichiro: *See—*
Hohokabe, Yorikatsu; and Takiyama, Eiichiro, 4,342,863, Cl. 528-360.000.

Tamura, Akira; and Suzuki, Yasuo, to Bridgestone Tire Co., Ltd. Radial tire for heavy load vehicles. 4,342,353, Cl. 152-362.00R.

Tamura, Eijiro, to Trio Kabushiki Kaisha. Power amplifier circuitry. 4,342,966, Cl. 330-268.000.

Tamura, Koichi, to Tokico Ltd. Disc brake. 4,342,381, Cl. 188-73.380.

Tamura, Sadahiro: *See—*
Nishikawa, Toshio; Ishikawa, Youhei; Tamura, Sadahiro; and Matsumoto, Haruo, 4,342,972, Cl. 333-206.000.

Tan, Toshimi; Hisano, Katsukuni; and Mizoi, Takao, to Hitachi, Ltd. Moving blade of steam turbine. 4,342,542, Cl. 416-224.000.

Tanaka, Akio; Edamura, Mizuo; Furuitsu, Satoshi; and Kunise, Satoru, to Kawasaki Jukogyo Kabushiki Kaisha. Ion-nitriding apparatus. 4,342,918, Cl. 422-186.040.

Tanaka, Shosuke; and Tatami, Mitsushige, to Sony Corporation. Apparatus for producing a phase-synchronized reference signal in a video signal reproducing system. 4,343,022, Cl. 360-36.000.

Tanaka, Toshie, to Nifco Inc. One-piece quick release clip. 4,342,139, Cl. 24-292.000.

Taniguchi, Koichi; Niwa, Kiyomi; and Siraisi, Tadaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Refuse disposal apparatus. 4,342,568, Cl. 48-111.000.

Tanner, Walter E. Heading reference system. 4,343,035, Cl. 364-453.000.

Tappe, Horst, to Cassella Aktiengesellschaft. Process for the manufacture of an N-hydroxyalkylcarbazole. 4,342,688, Cl. 260-315.000.

Tatami, Mitsushige: *See—*
Tanaka, Shosuke; and Tatami, Mitsushige, 4,343,022, Cl. 360-36.000.

Tate & Lyle Limited: *See—*
Daniels, Michael J., 4,342,603, Cl. 127-30.000.

Taylor, Byron K., to RCA Corporation. Removable protective cover for a video disc stylus cartridge. 4,342,394, Cl. 206-521.000.

Taylor Machine Works, Inc.: *See—*
Goodwin, Nolen R., 4,342,377, Cl. 187-9.00R.

Taylor, Thomas J., to Western Electric Company, Inc. Methods of terminating and connectorizing cables. 4,342,152, Cl. 29-860.000.

Teague, Edward W.; Hance, Max H.; and Neal, Carl R., to Burlington Industries, Inc. Brushed stretch denim fabric and process therefor. 4,342,565, Cl. 8-532.000.

Teague, Robert H., to Honeywell Inc. Multi-color multi-point recorder. 4,343,007, Cl. 346-46.000.

Teague, Ross L. Combination cast chair and spica table. 4,342,451, Cl. 269-328.000.

Teich, Wesley W., to Raytheon Company. Radiating mode stirrer heating system. 4,342,896, Cl. 219-10.55F.

Teijin Limited: *See—*
Shimada, Keizo; Aoki, Akihiro; Mera, Hiroshi; and Nakamura, Tsutomu, 4,342,715, Cl. 264-184.000.

Teledyne Industries, Inc.: *See—*
Lenz, Herman N.; and Host, David A., 4,342,489, Cl. 308-187.000.
Nickerson, James W., 4,342,293, Cl. 123-188.0GC.

Tenneco Inc.: *See—*
Erickson, Ernest A.; Hanson, Rodger D.; and Mews, Lance D., 4,342,373, Cl. 181-266.000.

Terashima, Isamu, to Hitachi, Ltd. Developing apparatus for electrostatic duplicator. 4,342,283, Cl. 118-689.000.

Tetra Werke Dr. rer. nat. Ulrich Baensch GmbH: *See—*
Panthofer, Rudolf, 4,342,401, Cl. 220-301.000.

Texaco Inc.: *See—*
Canup, Robert E.; and Alperstein, Martin, 4,342,305, Cl. 123-617.000.
Sherman, Philip B., 4,342,646, Cl. 208-326.000.
Trippet, Raymond, 4,342,552, Cl. 431-183.000.
Zimmerman, Robert L.; and McEntire, Edward E., 4,342,687, Cl. 260-243.300.

Texas Instruments Incorporated: *See—*
Hull, Charles G., 4,342,927, Cl. 307-452.000.
Sanford, Carlton E., 4,342,887, Cl. 200-83.00P.

Thatcher, Albert G. Convertible rocket-air breathing engine. 4,342,193, Cl. 60-246.000.

Theofilopoulos, Argyrios N.; and Dixon, Frank J., to Scripps Clinic & Research Foundation. Solid phase anti-C3 assay for detection of immune complexes. 4,342,566, Cl. 23-230.00B.
Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Track working machine with a ballast removing and planing device. 4,342,165, Cl. 37-104.000.
Thomas, Alan F., to Firmenich, S.A. Cis-10, 10-dimethyl-tricyclo (7.1.1.$0^{2,7}$) undec-2-en-4-one and use thereof as perfuming and flavoring ingredient. 4,342,320, Cl. 131-276.000.
Thomas, George L.: *See*—
Graff, William A.; and Thomas, George L., 4,342,553, Cl. 431-358.000.
Thomas, Reese R.: *See*—
Pickens, Robert C., Jr.; Kirchherr, Patricia R.; and Thomas, Reese R., 4,342,802, Cl. 428-92.000.
Thompson-CSF: *See*—
Galves, Jean P.; Merloz, Pierre; and Sagnard, Jean, 4,342,821, Cl. 430-12.000.
Thompson, Edwin R., to Forox Corporation. Method for loading pre-closed slide mounts. 4,342,147, Cl. 29-417.000.
Thompson, Hugh A.: *See*—
Radel, Clifford J.; and Thompson, Hugh A., 4,342,314, Cl. 128-287.000.
Thompson, Leonard K.; and Corbett, William H., to Continental Disc Corporation. Rupture disc alarm system. 4,342,988, Cl. 340-679.000.
Thompson, William E. Wiping inserts for windshield wipers, squeegees and the like. 4,342,129, Cl. 15-250.400.
Thulman, Robert D.; and Erickson, Alve J. Wood stove with safety forced air system. 4,342,306, Cl. 126-61.000.
Tincher, Cline A.; and Maxwell, Jerrold F., to BASF Wyandotte Corporation. Water-based hydraulic fluid containing an alkyl dialkanolamide. 4,342,658, Cl. 252-32.500.
Tisdale, Norman F., Jr. Apparatus and method for producing ingot mold caps. 4,342,357, Cl. 164-112.000.
Tisma, Ilie. Traction device for vehicle wheel. 4,342,352, Cl. 152-225.00C.
Titeflex Corporation: *See*—
Lalikos, James M.; Waite, Harold K.; and Lefebvre, Kenneth E., 4,342,612, Cl. 156-143.000.
Toke, Laszlo: *See*—
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,342,871, Cl. 546-65.000.
Tokico Ltd.: *See*—
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Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Kimura, Sakae; Shimura, Masahiro; and Okai, Tadatake, 4,342,662, Cl. 252-181.400.
Nieda, Yasuhiro; and Honda, Kiyokazu, 4,342,142, Cl. 29-25.130.
Taniguchi, Koichi; Niwa, Kiyomi; and Siraisi, Tadaaki, 4,342,568, Cl. 48-111.000.
Toldi, Lajos: *See*—
Solyom, Sandor; Szilagyi nee Farago, Katalin; Toldi, Lajos; Schafer, Inge; Szondy, Eleonora; Borvendeg, Janos; and Hermann nee Szente, Ilona, 4,342,754, Cl. 424-241.000.
Tolmie, Robert J., Jr., to Pitney Bowes Inc. Copy cycle controller for an electrostatic copier. 4,342,512, Cl. 355-14.0SH.
Tomiita, Kazuo: *See*—
Negishi, Takao; and Tomiita, Kazuo, 4,342,189, Cl. 57-288.000.
Tomioka, Kentaro: *See*—
Muramatsu, Hiroaki; Tomioka, Kentaro; Hirota, Kazuo; and Akahane, Shoji, 4,342,677, Cl. 523-116.000.
Tomita, Hitoshi; and Kobayashi, Masayoshi, to Diesel Kiki Co., Ltd. Distributor type fuel injection pump. 4,342,301, Cl. 123-502.000.
Tomy Kogyo Company, Inc.: *See*—
Nikaido, Teruo, 4,342,174, Cl. 46-92.000.
Tondeur, Gerard: *See*—
Marjollet, Jacques; Mevel, Jean-Claude; Palacio, Gerard; and Tondeur, Gerard, 4,342,570, Cl. 55-418.000.
Toray Industries, Inc.: *See*—
Kinashi, Takao; Fujita, Takashi; and Kawabe, Norio, 4,342,820, Cl. 430-11.000.
Negishi, Takao; and Tomiita, Kazuo, 4,342,189, Cl. 57-288.000.
Torenbeek, Reinder; van Drumpt, Jan D.; and Drost, Gerrit F., to Akzona Incorporated. Process for preparing peroxide master batches. 4,342,844, Cl. 525-387.000.
Torokvei, Thomas E., to Scepter Manufacturing Co., Ltd. Stackable bottle carrier. 4,342,388, Cl. 206-203.000.
Toshiba Electric Equipment Corporation: *See*—
Suzuki, Kiyoshi, 4,343,033, Cl. 362-307.000.
Toth, Istvan: *See*—
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,342,871, Cl. 546-65.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kanou, Noboru; and Mori, Keiji, 4,342,481, Cl. 296-217.000.
Transidyne General Corp.: *See*—
Diamond, Howard; Enzer, Steven E.; and Flowers, Joseph, Jr., 4,342,964, Cl. 324-450.000.
Transue, James A.; and Weisz, William, to Singer Company, The. Presser bar biasing spring structure. 4,342,272, Cl. 112-237.000.
Traster, Elden D., to Harris Data Communications, Inc. Video display terminal having improved character shifting circuitry. 4,342,990, Cl. 340-724.000.
Trembly, John F.: *See*—
Krishnakumar, Suppayan M.; Pocock, John F. E.; Mahajan, Gautam K.; and Trembly, John F., 4,342,895, Cl. 219-10.430.
Trick, Robert E., to Medical Engineering Corporation. Penile erectile system. 4,342,308, Cl. 128-79.000.
Trio Kabushiki Kaisha: *See*—
Tamura, Eijiro, 4,342,966, Cl. 330-268.000.
Trippet, Raymond, to Texaco Inc. Oil burner. 4,342,552, Cl. 431-183.000.
Trisops, Inc.: *See*—
Wells, Daniel R., 4,342,720, Cl. 376-107.000.
Truesdell, Deane M. Foamed construction apparatus and method. 4,342,181, Cl. 52-743.000.
Tsao, Utah, to Lummus Company, The. Stripping of aqueous ammonium carbonate solution. 4,342,735, Cl. 423-356.000.
Tsukamoto, Goro: *See*—
Sakamoto, Fumio; Ikeda, Shoji; Tsukamoto, Goro; and Utsumi, Isamu, 4,342,693, Cl. 549-229.000.
Tsutsui, Kikuo, to Amada Company, Limited. Feeding apparatus for machine tools. 4,342,237, Cl. 74-625.000.
Tsuyama, Shigeo: *See*—
Sakurai, Hisaya; Katayama, Yoshihiko; Ikegami, Tadashi; and Tsuyama, Shigeo, 4,342,708, Cl. 260-665.00R.
Tsuzuku, Susumu: *See*—
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Tuboi, Takao: *See*—
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Tuck, John W. Solar collector for heating air. 4,342,307, Cl. 126-449.000.
Tuck, Lee, to Phillips Petroleum Company. Method and apparatus for the reduction of flare smoke emissions. 4,342,550, Cl. 431-4.000.
Tuneblom, Eskil, to Dynapac Maskin AB. Cold surface planer cooling apparatus. 4,342,485, Cl. 299-39.000.
Tuttle, Helen K. Methods of producing stained glass effects. 4,342,611, Cl. 156-63.000.
UBE Industries, Ltd.: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,342,712, Cl. 264-63.000.
Ueng, Ming-Shean. Tape strut and tape strut tent. 4,342,327, Cl. 135-1.00R.
Ueno, Ryuzo; Matsuda, Toshio; Inamine, Shigeo; Kanayama, Tatsuo; and Fujita, Yatsuka, to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo. Process for inhibiting growth of *Clostridium botulinum* and formation of nitrosamines in meat. 4,342,789, Cl. 426-266.000.
Ulrich, Reinhard: *See*—
Johnson, Mark; and Ulrich, Reinhard, 4,342,517, Cl. 356-350.000.
Underwood, Gerald T., to Deere & Company. Protective closure for an article. 4,342,337, Cl. 138-96.00T.
Union Carbide Corporation: *See*—
Nadin, Robert P.; Nicholakopoulos, Antonios; Urban, Joseph P.; and Markowski, Steven G., 4,342,345, Cl. 141-392.000.
Union Special G.m.b.H.: *See*—
Petzold, W. Andreas, 4,342,273, Cl. 112-272.000.
Uniscrew Limited: *See*—
Zimmern, Bernard, 4,342,548, Cl. 418-195.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Stangroom, James E., 4,342,334, Cl. 137-625.480.
United McGill Corporation: *See*—
Hayashi, Tsutomu, 4,342,571, Cl. 55-137.000.
United States Gypsum Company: *See*—
Porter, William F., 4,342,582, Cl. 65-14.000.
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Agriculture: *See*—
Jurd, Leonard, 4,342,777, Cl. 424-282.000.
Army: *See*—
Farinacci, Anthony L., 4,342,437, Cl. 244-137.00R.
Heim, Werner F.; and McDowell, Hunter L., 4,342,632, Cl. 204-192.0EC.
Majerus, John N., 4,342,261, Cl. 102-307.000.
Mathews, Paul B., 4,342,514, Cl. 356-5.000.
Matta, Galal N., 4,342,328, Cl. 137-135.000.
Energy: *See*—
Kothmann, Richard E.; and Somers, Edward V., 4,342,816, Cl. 429-13.000.
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Watanabe, Takeo; and Matsuda, Makoto, to Mitsui Engineering and Shipbuilding Co., Ltd. Oscillator actuated hydraulic impulse device. 4,342,255, Cl. 91-40.000.
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WC Heraeus GmbH: *See*—
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Weaver, Simeon D., to Azcon Corporation. Apparatus for forming railroad spikes and the like. 4,342,127, Cl. 10-57.000.
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White, Gerald W.; and Volkers, Jack C., to Illinois Tool Works Inc. Gasless ion plating process and apparatus. 4,342,631, Cl. 204-192.00N.
Whitney, Douglass G.; and Martin, John K., III. Injector with programming means. 4,342,311, Cl. 128-214.00F.
Whitney, Douglass G.; and Martin, John K., III. Method of injecting fluid. 4,342,312, Cl. 128-214.00F.
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Williams, Robert H. Rotary internal combustion engine. 4,342,297, Cl. 123-228.000.
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Wilson, James G., II; and Hammers, P. Fred, to Wilson Welding Company, Inc. Water-cooled electrode holder. 4,342,878, Cl. 373-94.000.
Wilson, Joseph F.; and Parish, Robert S., to Phillips Petroleum Company. Fire-retardant insulating composition and its production. 4,342,669, Cl. 252-602.000.
Wilson, Wayne. Hydrofoil swim fin assemblies. 4,342,558, Cl. 441-61.000.
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Woodward, Oakley M.; and Henderson, John G. N., to RCA Corporation. Loop antenna arrangements for inclusion in a television receiver. 4,342,999, Cl. 343-702.000.

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Yagher, Charles, Jr., to Emerson Electric Co. Thermally actuatable electrical switch construction, conductive lead therefor and methods of making the same. 4,342,981, Cl. 337-407.000.

Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, to UBE Industries, Ltd. Process for producing continuous inorganic fibers. 4,342,712, Cl. 264-63.000.

Yamada, Kaichi; Morikawa, Yoshiyuki; Fujio, Katuharu; Yoshihiro, Koichi; Matsuda, Toshio; and Taguchi, Tatsuhisa, to Matsushita Electric Industrial Co., Ltd. Rotary vane compressor with valve control of oil to bias the vanes. 4,342,547, Cl. 418-84.000.

Yamada, Minoru: *See*—
Nozu, Takashi; Yamada, Minoru; and Watanabe, Yasuhiko, 4,342,528, Cl. 408-6.000.

Yamada, Muneo: *See*—
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; Yamada, Muneo; and Watanabe, Yoshiteru, 4,342,828, Cl. 435-41.000.

Yamakoshi, Akira: *See*—
Niimura, Tsutomu; Murakami, Kyoichi; and Yamakoshi, Akira, 4,343,018, Cl. 358-28.000.

Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, to Hitachi, Ltd. Differential pressure transmitter. 4,342,231, Cl. 73-721.000.

Yamamura, Takemi: *See*—
Yajima, Seishi; Okamura, Kiyohito; Hasegawa, Yoshio; and Yamamura, Takemi, 4,342,712, Cl. 264-63.000.

Yamashita, Keitaro; and Kumakura, Toshio, to Hitachi Metals, Ltd. Toner cartridge. 4,342,282, Cl. 118-657.000.

Yamazaki, Masahiro: *See*—
Joh, Yasushi; Yamazaki, Masahiro; Kaneko, Noriaki; Oikawa, Shigehiko; Makuta, Yoshihiro; and Hayashi, Chizuko, 4,342,711, Cl. 264-41.000.

Yanagihara, Hideo, to NSK-Warner K.K. Take-up force reducing mechanism of a seat belt retractor. 4,342,435, Cl. 242-107.000.

Yanagishima, Takayuki: *See*—
Seko, Yasutoshi; and Yanagishima, Takayuki, 4,342,279, Cl. 116-31.000.

Yanai, Nobuya: *See*—
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Yanai, Nobuya; Yamada, Muneo; and Watanabe, Yoshiteru, 4,342,828, Cl. 435-41.000.

Yazawa, Chihiro: *See*—
Harada, Takao; Ohashi, Hideaki; Koike, Wataro; Yazawa, Chihiro; and Nanjo, Kazuko, 4,342,859, Cl. 528-64.000.

Yeh, Hsu-Chieh. Method and apparatus for generating power and irrigating plants with solar energy and earth heat. 4,342,196, Cl. 60-531.000.

Yeomans, Bertram: *See*—
Cane, Charles; and Yeomans, Bertram, 4,342,627, Cl. 203-19.000.

Yin, Robert I., to Merck & Co., Inc. Use of heteropolysaccharide S-119 as a paper finish. 4,342,601, Cl. 106-209.000.

Yokohama Rubber Co., Ltd., The: *See*—
Ahagon, Asahiro; Misawa, Makoto; and Hirakawa, Hiroshi, 4,342,670, Cl. 523-353.000.

Yokono, Hitoshi: *See*—
Hira, Yasuo; Tsuzuku, Susumu; Gotoh, Masao; Yokono, Hitoshi; Kaneko, Hiroshi; and Hosoe, Yoshihisa, 4,342,842, Cl. 521-167.000.

Yokota, Toshikazu: *See*—
Fukase, Motonobu; Yokota, Toshikazu; and Oura, Masahisa, 4,342,384, Cl. 194-1.00C.

Yokota, Yukio; Sato, Masamichi; and Matsumoto, Kenji, to Fuji Photo Film Co., Ltd. Process for forming color filter. 4,342,818, Cl. 430-7.000.

York, George S.: *See*—
Wolford, Dale E.; and York, George S., 4,342,538, Cl. 415-170.00A.

Yoshida Kogyo K.K.: *See*—
Doguchi, Nobushige, 4,342,144, Cl. 29-155.00R.

Yoshida, Tomomasa: *See*—
Yamamoto, Yoshimi; Matsuoka, Yoshitaka; Kasai, Syozo; Takahashi, Yukio; Nagata, Takeo; Nagasu, Akira; Yoshida, Tomomasa; and Shimada, Satoshi, 4,342,231, Cl. 73-721.000.

Yoshihiro, Koichi: *See*—
Yamada, Kaichi; Morikawa, Yoshiyuki; Fujio, Katuharu; Yoshihiro, Koichi; Matsuda, Toshio; and Taguchi, Tatsuhisa, 4,342,547, Cl. 418-84.000.

Yoshizawa, Toshio: *See*—
Katoh, Takashi; and Yoshizawa, Toshio, 4,342,429, Cl. 242-18.0DD.

Young, Gary C.: *See*—
Evans, John W.; Young, Gary C.; and Stager, Charles W., 4,342,604, Cl. 127-31.000.

Young, James L.: *See*—
Fagnant, Norman A.; and Young, James L., 4,342,396, Cl. 209-546.000.

Yuhshin Co., Ltd.: *See*—
Okabe, Kanae; and Murayama, Hiroo, 4,342,136, Cl. 16-115.000.

Zado, Frank M., to Western Electric Company, Inc. Solder flux. 4,342,607, Cl. 148-23.000.

Zajac, John, to Eaton Corporation. Plasma etching electrode. 4,342,901, Cl. 219-121.0PD.

Zaniewski, Michel H. Ventilator. 4,342,258, Cl. 98-78.000.

Zeidler, Guenter: *See*—
Oestreich, Ulrich; and Zeidler, Guenter, 4,342,500, Cl. 350-96.230.

Zelacolor Systems Establishment: *See*—
Guillaume, Emile A. H., 4,342,510, Cl. 354-216.000.

Zengel, Hans-Georg; and Bergfeld, Manfred, to Akzona Incorporated. Process for the preparation of bis-N-chloramides. 4,342,707, Cl. 260-543.00A.

Zenith Radio Corporation: *See*—
Hockenbrock, Richard L., 4,342,942, Cl. 313-477.00R.

Ziemek, Gerhard; Klebl, Wolfram; Hoffmann, Ernst; and Brunn, Reiner, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Stranding stock of large cross sections. 4,342,190, Cl. 57-293.000.

Zimmerman, Robert L.; and McEntire, Edward E., to Texaco Inc. N-Substituted perhydrodioxazepines useful as polyurethane catalysts. 4,342,687, Cl. 260-243.300.

Zimmermann, Jakob; and Kocher, Willi, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for measuring the muzzle velocity V-null of a projectile fired from a weapon. 4,342,961, Cl. 324-179.000.

Zimmern, Bernard, to Uniscrew Limited. Screw having a V-shaped groove profile for cooperating with a pinion in a compression or expansion machine. 4,342,548, Cl. 418-195.000.

Zullo, Antonio, to CIR S.p.A. Divisione Sasib. Device for the formation of groups of cigarettes. 4,342,321, Cl. 131-282.000.

Zwingl, Johann; and Heckmann, Heinrich, to Vereinigte Nahrungsmittel-industrie Aktiengesellschaft. Process for maturing leaven. 4,342,785, Cl. 426-19.000.

Zyma S.A.: *See*—
Mirkovitch, Velimir, 4,342,745, Cl. 424-78.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Akzona Incorporated: *See*—
Schuurs, Antonius H. W. M.; and van Weemen, Bauke K., Re. 31,006, Cl. 435-7.000.

McCormick, Harold E.: *See*—
Prasse, Herbert F.; and McCormick, Harold E., Re. 31,005, Cl. 277-138.000.

Niimi, Koji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument utilizing data processing system. Re. 31,004, Cl. 84-1.010.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Niimi, Koji, Re. 31,004, Cl. 84-1.010.

Prasse, Herbert F.; and McCormick, Harold E., to Ramsey Corporation. Resilient plastic piston ring. Re. 31,005, Cl. 277-138.000.

Ramsey Corporation: *See*—
Prasse, Herbert F.; and McCormick, Harold E., Re. 31,005, Cl. 277-138.000.

Schuurs, Antonius H. W. M.; and van Weemen, Bauke K., to Akzona Incorporated. Process for the demonstration and determination of reaction components having specific binding affinity for each other. Re. 31,006, Cl. 435-7.000.

van Weemen, Bauke K.: *See*—
Schuurs, Antonius H. W. M.; and van Weemen, Bauke K., Re. 31,006, Cl. 435-7.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Lobur, Walter, to Colt Industries Operating Corp. Electrical discharge machining short circuit protection system of the keyed type. B1 3,614,368, Cl. 219—69 P.

Colt Industries Operating Corp.: *See*—
Lobur, Walter. B1 3,614,368, Cl. 219—69 P.

Rietveld, Frank P., to Colt Industries Operating Corporation. Wire electrode feed system for electrical discharge machining. B1 4,016,395, Cl. 219—69 W.

Colt Industries Operating Corporation: *See*—
Rietveld, Frank P. B1 4,016,395, Cl. 219—69 W.

LaFiandra, Carlo F., to Perkin-Elmer Corporation, The. Precision base mercury vapor lamp. B1 Re. 30,315, Cl. 313—51.

Perkin-Elmer Corporation, The: *See*—
LaFiandra, Carlo F.

LIST OF DESIGN PATENTEES

A & F Dispenser, Inc.: *See*—
Fischer, Thomas C.; and Nepper, John P., 265,616, Cl. D6-127.000.

Aero Systems Research, Inc.: *See*—
Buck, Gaylord B., 265,634, Cl. D10-75.000.

Alpert, Monte N.: *See*—
Schoenfeld, Robert P.; and Alpert, Monte N., 265,661, Cl. D21-24.000.

American Antenna Corporation: *See*—
Liautaud, James P., 265,647, Cl. D14-12.000.

American Hospital Supply Corporation: *See*—
Christoffel, William D.; and Edwards, Christopher J. C., 265,684, Cl. D24-99.000.

Arzberger, William A.; and LaLumiere, Edward J., to Data Packaging Corporation. Beverage dispenser. 265,653, 8-3-82, Cl. D15-112.000.

Astra-Syntex Scandinavia Aktiebolag: *See*—
Redaelli, Dordie; and Berggrund, Kerstin, 265,628, Cl. D9-418.000.

Aubert, Benjamin A. Novelty plaque or the like. 265,642, 8-3-82, Cl. D11-133.000.

Ballard, James H. Bathtub. 265,678, 8-3-82, Cl. D23-55.000.

Ballard, James H. Shower stall. 265,679, 8-3-82, Cl. D23-57.000.

Barr, Josef J. Diamond necklace. 265,635, 8-3-82, Cl. D11-6.000.

Barr, Josef J. Diamond necklace. 265,636, 8-3-82, Cl. D11-6.000.

Barr, Josef J. Diamond necklace. 265,637, 8-3-82, Cl. D11-6.000.

Barr, Josef J. Diamond necklace. 265,638, 8-3-82, Cl. D11-10.000.

Barr, Josef J. Bracelet or similar article. 265,639, 8-3-82, Cl. D11-17.000.

Bartels, Dawn R. Combined pot lid holder and spoon holder. 265,622, 8-3-82, Cl. D7-73.000.

Batra, Vijay, to Morse Shoe, Inc. Unit sole. 265,605, 8-3-82, Cl. D2-320.000.

Berggrund, Kerstin: *See*—
Redaelli, Dordie; and Berggrund, Kerstin, 265,628, Cl. D9-418.000.

Bissu, Abraham C. Construction beam. 265,688, 8-3-82, Cl. D25-74.000.

Bongiorno, Alexander J. Jewel holder for a pinch earring. 265,641, 8-3-82, Cl. D11-92.000.

Bouve, Thomas T., to Tech Games, Incorporated. Game board. 265,662, 8-3-82, Cl. D21-34.000.

Bowman Construction Supply, Inc.: *See*—
Bowman, William E., 265,687, Cl. D25-74.000.

Bowman, William E., to Bowman Construction Supply, Inc. Expansion joint sealing strip for roadway joints and the like. 265,687, 8-3-82, Cl. D25-74.000.

Brion, Ennio, to Brionvega S.p.A. Color television receiver. 265,651, 8-3-82, Cl. D14-80.000.

Brionvega S.p.A.: *See*—
Brion, Ennio, 265,651, Cl. D14-80.000.

Buck, Basil, to Hunter Douglas, Inc. Valance bracket for venetian blind. 265,625, 8-3-82, Cl. D8-354.000.

Buck, Gaylord B., to Aero Systems Research, Inc. Solar and wind energy monitor. 265,634, 8-3-82, Cl. D10-75.000.

Campion, Stanley F., executor: *See*—
Jensen, George B., deceased, 265,620, Cl. D7-40.000.

Canon Kabushiki Kaisha: *See*—
Matsushima, Hiroshi, 265,656, Cl. D16-31.000.

Christoffel, William D.; and Edwards, Christopher J. C., to American Hospital Supply Corporation. Hypodermic needle destroyer. 265,684, 8-3-82, Cl. D24-99.000.

Christov Urich, Joy. Tea kettle or similar article. 265,621, 8-3-82, Cl. D7-60.000.

Combi Co., Ltd.: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Mizugami, Masako, 265,665, Cl. D21-64.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 265,666, Cl. D21-65.000.

Community Coffee Company, Inc.: *See—*
Saurage, Henry N., III; Saurage, Donna M.; and Waddelow, Janette D., 265,617, Cl. D6-144.000.

Cooper, Marvin. Garment bag. 265,607, 8-3-82, Cl. D3-71.000.

Costa, Laurent: *See—*
Virte, Jean; and Costa, Laurent, 265,615, Cl. D6-114.000.

Data Packaging Corporation: *See—*
Arzberger, William A.; and LaLumiere, Edward J., 265,653, Cl. D15-112.000.

Decaux, Jean C. Enclosure for toilet. 265,685, 8-3-82, Cl. D25-16.000.

Drabert Sohne Minden (Westf.): *See—*
Zapf, Otto, 265,613, Cl. D6-69.000.

Drummond, Denis S.; and Mayock, Michael R., to Zimmer, Inc. Windowed hook holder. 265,683, 8-3-82, Cl. D24-27.000.

Ducourant, Jacques. Hand held skiing stabilizer or similar article. 265,675, 8-3-82, Cl. D21-230.000.

Dumas-Hermes, Jean-Louis F., to La Montre Hermes S.A. Watch. 265,632, 8-3-82, Cl. D10-39.000.

Edwards, Christopher J. C.: *See—*
Christoffel, William D.; and Edwards, Christopher J. C., 265,684, Cl. D24-99.000.

Eguchi, Yoshiaki, to Janome Sewing Machine Co. Ltd. Sewing machine. 265,652, 8-3-82, Cl. D15-70.000.

Fehric, Mustafa. Toy space craft. 265,669, 8-3-82, Cl. D21-87.000.

Fischer, Thomas C.; and Nepper, John P., to A & F Dispenser, Inc. Dispensing container or similar article. 265,616, 8-3-82, Cl. D6-127.000.

Fish, Darrell D., to T.H.E.M., Inc. Tray for holding typewriter film ribbon cassette. 265,629, 8-3-82, Cl. D9-425.000.

Fortier, Frank J. Houseboat deck. 265,646, 8-3-82, Cl. D12-301.000.

Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Dialing pad for a car telephone set. 265,648, 8-3-82, Cl. D14-66.000.

Glaubinger, Martin: *See—*
Neilsen, Hildaur L.; and Glaubinger, Martin, 265,659, Cl. D19-76.000.

Godberson, Donald E. Dice game box. 265,663, 8-3-82. Cl. D21-41.000.

Goldfracht, Paul. Handle for a stapling machine. 265,624, 8-3-82, Cl. D8-107.000.

Goto, Tetuya, to Ricoh Co., Ltd. Electrostatic copier. 265,655, 8-3-82, Cl. D16-30.000.

Gronborg, Jan L.; and Persson, Lars E. Guard for skate blade. 265,674, 8-3-82, Cl. D21-225.000.

Gusrud, Svein A.; and Mengshoel, Hans C. Chair. 265,610, 8-3-82, Cl. D6-38.000.

Gusrud, Svein A.; and Mengshoel, Hans C. Chair. 265,612, 8-3-82, Cl. D6-38.000.

Hamada, Masanori; and Saigo, Yoshiyuki, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 265,649, 8-3-82, Cl. D14-70.000.

Hampton, Auborn R. Combined ball hitch and vehicle carrier for golf club carts having vertical mounting coupling. 265,645, 8-3-82, Cl. D12-157.000.

Hicks, Arthur M., Jr.; and Millar, John H., Jr. Coal stove. 265,680, 8-3-82, Cl. D23-97.000.

Hill, Betty S. Jewelry chain arranger. 265,640, 8-3-82, Cl. D11-86.000.

Hirooka, Junji: *See—*
Fukushima, Hisao; and Hirooka, Junji, 265,648, Cl. D14-66.000.

Holland, Joe A. Horseshoe puzzle. 265,670, 8-3-82, Cl. D21-104.000.

Hunter Douglas, Inc.: *See—*
Buck, Basil, 265,625, Cl. D8-354.000.

Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Mizugami, Masako, 265,665, Cl. D21-64.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 265,666, Cl. D21-65.000.

Jackson, Andrew D. Game table. 265,660, 8-3-82, Cl. D21-14.000.

Janome Sewing Machine Co. Ltd.: *See—*
Eguchi, Yoshiaki, 265,652, Cl. D15-70.000.

Jensen, George B., deceased (by Campion, Stanley F., executor), to Syracuse China Corporation. Dish cover or similar article. 265,620, 8-3-82, Cl. D7-40.000.

Johnson, Edward A. Casing volume measuring tape. 265,633, 8-3-82, Cl. D10-71.000.

Johnston, Joseph E.: *See—*
Lucas, George W., Jr.; and Johnston, Joseph E., 265,668, Cl. D21-87.000.

Kan, Frederick S. C. Ceiling fan. 265,681, 8-3-82, Cl. D23-158.000.

Kano, Kazuyoshi. Cushion for car seat. 265,619, 8-3-82, Cl. D6-200.000.

Kasai, Kazumi, to Yoshida Kogyo, K.K. Slide fastener. 265,606, 8-3-82, Cl. D2-415.000.

Kawata, Yoshiaki: *See—*
Sugiwaka, Takayo; Kawata, Yoshiaki; and Sumino, Tadashi, 265,650, Cl. D14-79.000.

Kenny, Thomas P. Guitar. 265,658, 8-3-82, Cl. D17-19.000.

Knudson, Kenneth C., to Sybaris Inns Ltd. Hanging chair. 265,611, 8-3-82, Cl. D6-47.000.

Kozlowski, Edward C., to Sterling Drug Inc. Dispensing container. 265,626, 8-3-82, Cl. D9-373.000.

La Montre Hermes S.A.: *See—*
Dumas-Hermes, Jean-Louis F., 265,632, Cl. D10-39.000.

LaLumiere, Edward J.: *See—*
Arzberger, William A.; and LaLumiere, Edward J., 265,653, Cl. D15-112.000.

Liautaud, James P., to American Antenna Corporation. Hand held microphone. 265,647, 8-3-82, Cl. D14-12.000.

Lippisch, Elizabeth F.: *See—*
Lippisch, Hangwind F.; Lippisch, Elizabeth F.; and Wilcox, Debra J., 265,667, Cl. D21-86.000.

Lippisch, Hangwind F.; Lippisch, Elizabeth F.; and Wilcox, Debra J., to Studio 5. Toy space vehicle. 265,667, 8-3-82, Cl. D21-86.000.

Lovell, James R. Camera attachment for taking three dimensional pictures. 265,657, 8-3-82, Cl. D16-47.000.

Lucas, George W., Jr.; and Johnston, Joseph E., to Lucasfilm. Toy space vehicle. 265,668, 8-3-82, Cl. D21-87.000.

Lucasfilm: *See—*
Lucas, George W., Jr.; and Johnston, Joseph E., 265,668, Cl. D21-87.000.

Massonnet, Henry. Chair. 265,614, 8-3-82, Cl. D6-76.000.

Matsumoto, Susumu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 265,666, Cl. D21-65.000.

Matsushima, Hiroshi, to Canon Kabushiki Kaisha. Electrophotographic copier. 265,656, 8-3-82, Cl. D16-31.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hamada, Masanori; and Saigo, Yoshiyuki, 265,649, Cl. D14-70.000.
Sugiwaka, Takayo; Kawata, Yoshiaki; and Sumino, Tadashi, 265,650, Cl. D14-79.000.

Mayock, Michael R.: *See—*
Drummond, Denis S.; and Mayock, Michael R., 265,683, Cl. D24-27.000.

Mengshoel, Hans C.: *See—*
Gusrud, Svein A.; and Mengshoel, Hans C., 265,610, Cl. D6-38.000.
Gusrud, Svein A.; and Mengshoel, Hans C., 265,612, Cl. D6-38.000.

Millar, John H., Jr.: *See—*
Hicks, Arthur M., Jr.; and Millar, John H., Jr., 265,680, Cl. D23-97.000.

Miniere, Richard. Masonry block. 265,689, 8-3-82, Cl. D25-97.000.

Miyakawa, Eiji, to Miyakawa Industry Co., Ltd. Guide plate for a multiple spindle attachment for drilling and tapping machines. 265,654, 8-3-82, Cl. D15-132.000.

Miyakawa Industry Co., Ltd.: *See—*
Miyakawa, Eiji, 265,654, Cl. D15-132.000.

Mizugami, Masako: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Mizugami, Masako, 265,665, Cl. D21-64.000.

Morse Shoe, Inc.: *See—*
Batra, Vijay, 265,605, Cl. D2-320.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Mizugami, Masako, to Combi Co., Ltd. Rattle toy. 265,665, 8-3-82, Cl. D21-64.000.

Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, to Combi Co., Ltd. Educational toy rattle. 265,666, 8-3-82, Cl. D21-65.000.

Neilsen, Hildaur L.; and Glaubinger, Martin, to Rolodex Corporation. Combined card file and curved top cards. 265,659, 8-3-82, Cl. D19-76.000.

Nepper, John P.: *See—*
Fischer, Thomas C.; and Nepper, John P., 265,616, Cl. D6-127.000.

Newton, Billy R. Clock. 265,631, 8-3-82, Cl. D10-6.000.

Nippon Infrared Industries Co., Ltd.: *See—*
Suenaga, Norihiro, 265,682, Cl. D24-8.000.

O'Connell, Danny R. Portable reloader pedestal. 265,677, 8-3-82, Cl. D22-99.000.

Oki Electric Industry Co., Ltd.: *See—*
Fukushima, Hisao; and Hirooka, Junji, 265,648, Cl. D14-66.000.

Orenstein, Henry. Activity toy. 265,664, 8-3-82, Cl. D21-59.000.

Orenstein, Henry. Toy robot. 265,673, 8-3-82, Cl. D21-150.000.

Oxford Hall Silversmiths, Ltd.: *See—*
Seibel, Ben, 265,623, Cl. D7-106.000.

Persson, Lars E.: *See—*
Gronborg, Jan L.; and Persson, Lars E., 265,674, Cl. D21-225.000.

Pike Trailer Co.: *See—*
Spence, John R., 265,644, Cl. D12-93.000.

Plante, Emile A. P. Corner for lobster trap. 265,676, 8-3-82, Cl. D22-18.000.

Qualcor Inc.: *See—*
Segal, Michael, 265,627, Cl. D9-389.000.

Redaelli, Dordie; and Berggrund, Kerstin, to Astra-Syntex Scandinavia Aktiebolag. Pill dispensing container. 265,628, 8-3-82, Cl. D9-418.000.

Ricoh Co., Ltd.: *See—*
Goto, Tetuya, 265,655, Cl. D16-30.000.

Robertson, Stephen H.; and Ward, Randall L. Bookcase. 265,618, 8-3-82, Cl. D6-186.000.

Rolodex Corporation: *See—*
Neilsen, Hildaur L.; and Glaubinger, Martin, 265,659, Cl. D19-76.000.

Saigo, Yoshiyuki: *See—*
Hamada, Masanori; and Saigo, Yoshiyuki, 265,649, Cl. D14-70.000.

Saurage, Donna M.: *See—*
Saurage, Henry N., III; Saurage, Donna M.; and Waddelow, Janette D., 265,617, Cl. D6-144.000.

Saurage, Henry N., III; Saurage, Donna M.; and Waddelow, Janette D., to Community Coffee Company, Inc. Service booth for stores and the like. 265,617, 8-3-82, Cl. D6-144.000.

Schoenfeld, Robert P.; and Alpert, Monte N. Illuminated swivel top table usable as an ornamental display and/or game surface. 265,661, 8-3-82, Cl. D21-24.000.
Segal, Michael, to Qualcor Inc. Bottle or similar article. 265,627, 8-3-82, Cl. D9-389.000.
Seibel, Ben, to Oxford Hall Silversmiths, Ltd. Kitchen fork or similar utensil. 265,623, 8-3-82, Cl. D7-106.000.
Smith, Ernest P. Plaque with an ancestral tree. 265,643, 8-3-82, Cl. D11-135.000.
Smithson, Ulyss E. Cast-in-place threshold structure for overhead door openings in building walls, and the like. 265,686, 8-3-82, Cl. D25-73.000.
Sparrow, Rodney G. Paint brush and tool keeper. 265,608, 8-3-82, Cl. D3-73.000.
Spence, John R., to Pike Trailer Co. Vehicle van corner cap member. 265,644, 8-3-82, Cl. D12-93.000.
Sterling Drug Inc.: *See*—
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NOTE.—First number, class; second number, subclass; third number, patent number

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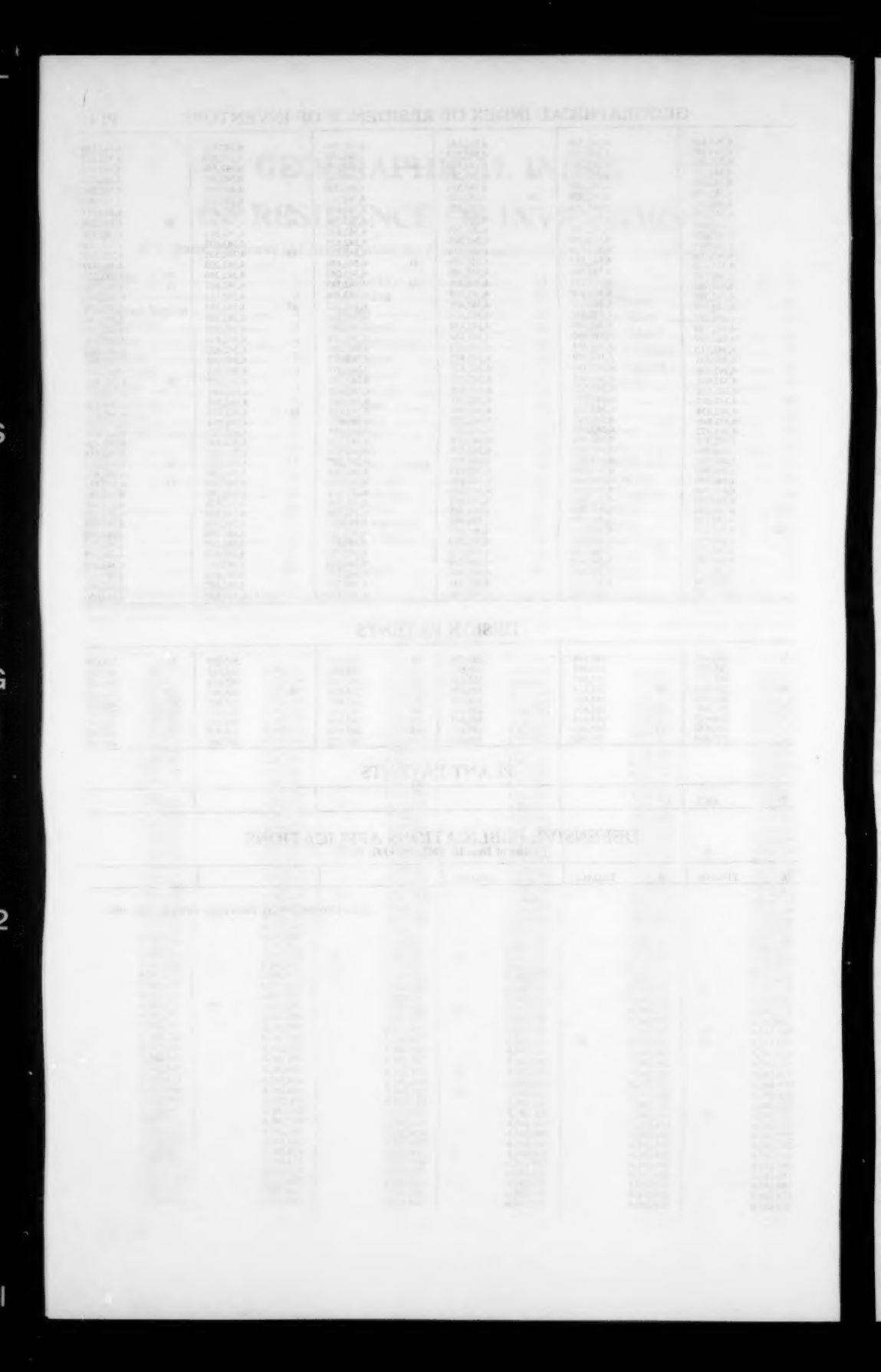

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Perrotta, Kenneth A., to Whatman Reeve Angel Limited. Apparatus for and method of removing volatile boiler-feed additives from pressurized steam. 4,342,730, Cl. 423-215.500.
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Gentry, Cecil C.; and Small, William M., 4,342,360, Cl. 165-67.000.
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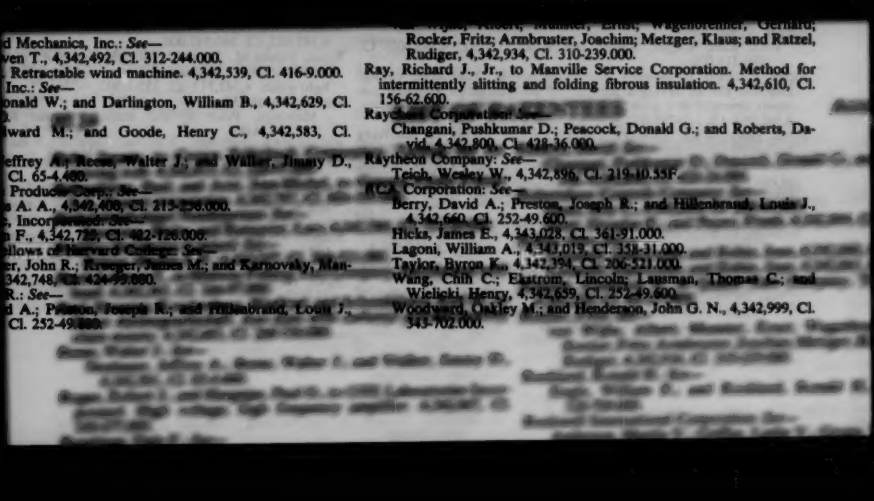

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